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IN THE
Supreme Court of the United States

SONY COMPUTER ENTERTAINMENT INC., *et al.*,

Petitioners,

v.

CONNECTIX CORPORATION,

Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Ninth Circuit

PETITION FOR WRIT OF CERTIORARI

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QUESTIONS PRESENTED

1. Is the Ninth Circuit's newly fashioned *per se* fair use rule for computer software which excuses any direct copying of copyrighted software undertaken for the purpose of quickly and inexpensively making an "emulation" product – regardless of the impact on the copyright holder's potential rewards – consistent with the provisions and purposes of the Copyright Act?

2. Even if copying for purposes of reverse engineering copyrighted software could be properly excused as fair use, is additional, unnecessary copying for related product development and other purposes also excused as fair use?

LIST OF PARTIES

Pursuant to Rule 14.1(b) and Rule 29.6, the following list identifies all of the parties before the United States Court of Appeals for the Ninth Circuit.

Sony Computer Entertainment America Inc. and Sony Computer Entertainment Inc. ("Sony") were appellees below. Sony Computer Entertainment America Inc. is wholly owned by Sony Computer Entertainment Inc., which is wholly owned by Sony Corporation of Japan.

Connectix Corporation, appellant below, reported having no parent corporations and no publicly held corporations owning 10% or more of its stock.

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PETITION FOR WRIT OF CERTIORARI

Petitioners Sony Computer Entertainment Inc. and Sony Computer Entertainment America Inc. ("Sony") respectfully request this Court to issue a writ of certiorari to review a decision of the United States Court of Appeals for the Ninth Circuit that significantly expands the copyright defense of fair use as applied to computer programs – excusing infringement when unauthorized copying is undertaken to derive software that emulates and competes directly with the protected work.

OPINIONS BELOW

The decision of the United States Court of Appeals for the Ninth Circuit, reported at 203 F.3d 596 (9th Cir. 2000), is reprinted at Pet. App. 1a. The decision of the United States District Court for the Northern District of California, reported at 48 F. Supp. 2d 1212 (N.D. Cal. 1999), is reprinted at Pet. App. 27a. The order of the United States Court of Appeals for the Ninth Circuit, denying rehearing and rehearing *en banc*, is

set forth at Pet. App. 51a.

JURISDICTION

Sony brought this suit in the United States District Court for the Northern District of California, which properly exercised jurisdiction under 28 U.S.C. § 1331. The District Court issued a preliminary injunction on April 20, 1999 against Connectix, which timely appealed to the United States Court of Appeals for the Ninth Circuit. The Ninth Circuit issued its decision February 10, 2000. Petitioner timely filed a petition for rehearing and rehearing *en banc*, which was denied April 3, 2000. Therefore, jurisdiction of this Court is properly invoked pursuant to 28 U.S.C. § 1254(1).

STATUTORY PROVISION INVOLVED

This case involves the provision of the Copyright Act governing fair use, 17 U.S.C. § 107, reprinted at Pet. App. 52a.

STATEMENT OF THE CASE

Background. Sony invested three years and $500 million to develop the software and hardware for its PlayStation® console – a dedicated computer for playing video games, which uses a television screen as the computer monitor. Pet. App. 28a-29a. The operating system software, the Sony BIOS, is copyrighted. *Id.* at 29a. The processes performed by the key hardware components are Sony trade secrets. *Id.* at 29a.

Connectix purchased a PlayStation® console, broke it apart, took out the chip containing the BIOS, and downloaded the contents onto a disk. *Id.* at 32a.[1/] Connectix then repeatedly copied Sony's software, using it to fabricate

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1/ Connectix had initially copied and used a pirated version of Sony's BIOS, downloaded from the Internet, until discovering it was an outdated version. *Id.* at 7a, 31a, 38a.

software that emulates both the BIOS and the PlayStation® hardware components. Connectix first used unauthorized copies of the BIOS to make software that imitates the PlayStation® hardware components. *Id.* at 31a, 36a, 41a. It then made further unauthorized copies of Sony's BIOS to reverse engineer the BIOS and produce software that imitates the BIOS itself. *Id.* at 36a. Connectix also made copies of the Sony BIOS in operating the prototype it used to demonstrate and promote its product, *id.* at 39a, and in using the Sony BIOS to debug its product, *id.* at 7a, 15a & n.8. Connectix's total investment in a product that competes directly with the PlayStation® BIOS and console was six months and $150,000. *Id.* at 31a-32a; Eric Traut Dep. at 11-12, 14, Def./Appellant's Excerpts of Record IV (9th Cir. filed May 26, 1999).[2/]

Connectix's product, Virtual Game Station (VGS), is called an "emulator." Pet. App. 8a, 31a. Connectix's product emulates a PlayStation® computer when a PlayStation® game compact disk is inserted into a Macintosh computer. The Connectix VGS is intended to imitate Sony's PlayStation® console; it is intended to compete with the PlayStation® console; and it is marketed as a substitute for the PlayStation® console. *Id.* at 8a, 39a, 42a. Moreover, it is undisputed that Sony has lost, and will continue to lose, sales of its PlayStation® BIOS and console due to the direct competition from Connectix's product. *Id.* at 42a.

Proceedings below. Sony filed suit against Connectix for copyright infringement and other causes of action on January

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2/ Immediately after introducing its emulation product for Macintosh computers, Connectix began working on an emulation product for Windows-based computers. To do so, Connectix again copied and used the Sony BIOS instead of using its own emulation software. *Id.* at 7a.

27, 1999. *Id.* at 27a. After discovery, Sony moved for a preliminary injunction. *Id.* at 27a. The district court found that Sony held a copyright in the BIOS, that the validity of the copyright was undisputed, that Connectix admitted making copies of the BIOS in its entirety and using the copies to derive its emulation software, and that Connectix's repeated wholesale copying of the BIOS constituted unlawful copying under the Copyright Act. *Id.* at 33a, 36a.

In reviewing Connectix's fair use defense, the district court found that Connectix had a commercial purpose in copying the BIOS and that its product was not transformative. *Id.* at 39a. The court explained that Connectix conceded its product "contains the same components as a PlayStation" and "does not do anything new, anything different, or anything unique from the PlayStation." *Id.* The court found that the only difference was that VGS used a computer screen rather than a television screen as a monitor, and that these screens are interchangeable for purposes of the analysis. *Id.*[3/] Thus, the court found that Connectix's "VGS is a *substitute* product. It is undisputed that VGS was developed as a replacement for PlayStation." *Id.* at 40a. The court found also that "Connectix copied and used all of Sony's BIOS in the development of the VGS." *Id.* at 40a. And it found, based on expert declarations from both parties, that the Connectix product has caused, and will continue to cause, Sony to lose sales of its PlayStation® console. *Id.* at 42a. Therefore, the district court rejected Connectix's fair use defense and enjoined Connectix from selling or distributing VGS and from copying Sony's BIOS or using the BIOS to make derivative works as a step in developing VGS for Windows. *Id.* at 49a. Notably, the injunction left Connectix

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3/ *Cf. UMG Recordings, Inc. v. MP3.com, Inc.*, 92 F. Supp. 2d 349, 351 (S.D.N.Y. 2000) (change in platform not transformative).

free to create a VGS for Windows if it did so without using unauthorized copies of the Sony BIOS.[4/]

The Ninth Circuit reversed, holding that Connectix's copying was excused as fair use "as a matter of law." *Id.* at 22a. The court relied on the reasoning of an earlier Ninth Circuit decision, *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1993). In *Sega*, the question before the court was whether the designer of independently created video game programs was permitted under the fair use defense to copy, in order to reverse engineer, the portion of Sega's software that permits games to be operable on Sega Genesis consoles (Sega's dedicated computers for playing video games). Writing for the panel in *Sega*, Judge Reinhardt found that infringement to be excused as a fair use. In doing so, he cited the well-established copyright doctrine that expression is protected but ideas are not, but he applied that doctrine in a novel way. The distinction between ideas and expression is ordinarily applied to determine whether what was copied is protected or unprotected. But in *Sega*, the defendant conceded it had copied protected expression. Judge Reinhardt cited the distinction between ideas and expression in applying the *fair use defense* to excuse infringement of protected expression as a method for obtaining access to unprotected ideas.

Thus, in applying the fair use factors, Judge Reinhardt held that because computer programs "contain unprotected aspects which cannot be examined without copying," they merit "a lower degree of protection than more traditional literary

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4/ The district court also rejected copyright misuse and Section 117 defenses, and found for Sony on its trademark tarnishment claim, 15 U.S.C. § 1125(c)(1), on the ground that Connectix had admitted that games do not run as well on its VGS as they do on a Sony PlayStation® console. *Id.* at 43a-44a. These claims are not at issue in this petition.

works." 977 F.2d at 1526.[5/] He also discounted the defendant's commercial purpose, the impact of defendant's competitive products on the copyright holder's market, and the defendant's use of copying to avoid paying for a license. *Id.* at 1522-23. Yet despite the *Sega* court's broad language, its analysis appeared to turn on the fact that the defendant had independently designed its own games and sought only to modify these existing games to make them compatible with the Genesis console. *Id.* at 1522. It also appeared to turn on the court's finding that these independent games competed based on "the characteristics of the game program as experienced by the user" – *i.e.*, the elements that were independently designed – and therefore the copying was not used to directly supplant Sega games. *Id.* at 1523. *Sega* could thus be read as exonerating copying for the purpose of making software interoperable only when the copier has independently created a computer program that competes on the basis of what was independently designed.[6/]

The decision below, however, went much further. It applied *Sega* to allow, as fair use, wholesale copying of computer programs undertaken to produce software that simply emulates the copied program in order to supplant it. The district court had rejected such a broad reading of *Sega* because it would provide a *per se* exception for copying of computer

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5/ Computer programs are ordinarily released in machine-readable object code, which is binary, expressed in 1's and 0's. It can be translated, slowly by a person or quickly by machine, into source code, which expresses the same directions to the computer in recognizable phrases or equations. The process of translation, which necessarily copies the work, is called disassembly or decompilation. It is one form of reverse engineering.

6/ *Sega* could also be read as excusing such copying solely to the extent necessary to read the copyrighted work, and not for any additional purposes. 977 F.2d at 1527-28.

programs as long as the infringer "edit[ed] the protected code out of its final product." Pet. App. 49a. On appeal, the Ninth Circuit embraced the broadest reading of *Sega*, holding that any "intermediate" copying of software – *i.e.*, copying in the course of making new software – is fair use as long as the ultimate product developed from it is not infringing. *Id.* at 19a.

Under the Ninth Circuit's new rule, it is always fair use to copy a computer program in order to construct replacement code that directly emulates the original – and is intended as a market substitute – on the theory that the ultimate replacement of the original code with different code in the end product is inherently "transformative." *Id.*[7/] On that basis, the court dispensed with three of the four statutory fair use factors. Connectix's commercial purpose for repeatedly copying Sony's BIOS was excused *because* the end product was found to be "modestly" transformative. *Id.* at 19a-20a. Connectix's repeated copying of Sony's entire computer program was discounted, again because the end product was found to be transformative. *Id.* at 17a. And the undisputed harm that sales of Connectix's product had caused, and would continue to cause, the market for Sony's PlayStation® consoles was disregarded on the ground that a transformative product is "a legitimate competitor in the market" and therefore its market impact does not militate against fair use. *Id.* at 21a. The court expressed concern that copyright would otherwise grant Sony

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7/ The court found Connectix's product "modestly transformative," mentioning its affording play on a different platform, but relying on its use of object code different from Sony's BIOS. *Id.* ("We are therefore at a loss to see how Connectix's drafting of entirely new object code for its VGS program could not be transformative, despite the similarities in function and screen output."). Under this rule, Connectix would also have been excused from liability if it had copied Sony's BIOS, developed emulation software that operated a Sony-like dedicated computer, and sold that product – a dedicated console with operating software that emulates Sony's BIOS.

a monopoly, at least in a market defined as operating software for playing Sony and Sony-licensed games. *Id.* (It is undisputed that Sony lacks monopoly power in the home video game or home video game console markets.)

In applying the remaining fair use factor – the nature of the work – the court found that computer programs are "at a distance from the core" of intended copyright protection because computer code may not be easily read by people. *Id.* at 11a. Therefore, it reasoned, copying is always permitted for the purpose of gaining access to aspects that are not copyrightable – reading a right of access into the fair use provision that excuses infringement of the protected aspects. *Id.* at 12a. The court held further that *all* of Connectix's infringement of Sony's BIOS was excused, rejecting arguments that much of it was not necessary to gain access to unprotected aspects, on the ground that the frequent copying and unauthorized use permitted Connectix to emulate Sony's hardware and copyrighted software in the most "efficient" manner. *Id.* at 16a-17a.[8/]

REASONS FOR GRANTING THE PETITION

Certiorari should be granted because this case is highly significant – involving a major, judicially imposed change in copyright law, likely to have a wide impact – and because that change is inconsistent with the provisions and goals of the Copyright Act as interpreted in decisions of this Court and others, and inconsistent with the protection Congress specifically chose to provide computer programs.

The many new forms of digital technology, combined with Congress's extensions of copyright protection to software, have

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8/ The court of appeals also reversed the district court's ruling on trademark tarnishment on the grounds of insufficient evidence. *Id.* at 25a.

presented the courts with new and difficult problems in applying traditional copyright doctrine.[9/] In the decision below, the Ninth Circuit splintered the fair use defense, leaving in place one set of rules for more traditional works and another for works less favored by that court. As a result, the defense – unmoored from its long-established role of identifying and excusing uses that are not appreciably inconsistent with the rights granted to copyright holders – has become instead a vehicle by which courts may overrule Congress's decision to protect works like software by granting gaping exceptions.[10/]

As this Court has explained, "copyright is intended to increase and not to impede the harvest of knowledge." *Harper & Row, Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539, 545 (1985). By twisting the traditional anchors of the four statutory factors and inventing a new role for the fair use defense, the Ninth Circuit has given "insufficient deference to the scheme established by the Copyright Act for fostering the original works that provide the seed and substance of this harvest," in which the "rights conferred by copyright are

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9/ *See generally UMG Recordings*, 92 F. Supp. 2d 349; *Universal City Studios, Inc. v. Reimerdes*, 82 F. Supp. 2d 211 (S.D.N.Y. 2000); *Kelly v. Arriba Soft Corp.*, 77 F. Supp. 2d 1116 (C.D. Cal. 1999). Software itself is already commonplace in computers, cellular telephones, telephone switches, personal digital assistants, even household appliances. In the next few years it will become virtually ubiquitous, at work and at home.

10/ *See also Bateman v. Mnemonics, Inc.*, 79 F.3d 1532, 1540 n.18 (11th Cir. 1996) (endorsing the Ninth Circuit's teaching that the public enjoys a fair use privilege to copy computer programs to determine their underlying nonprotectable ideas); *Atari Games Corp. v. Nintendo of America Inc.*, 975 F.2d 832 (Fed. Cir. 1992) (interpreting Ninth Circuit law to conclude that Atari's copying of Nintendo software to reverse engineer the lock/unlock portion of the code for the purpose of making Atari games that could play on Nintendo consoles would have been fair use but for Atari's unclean hands).

designed to assure contributors to the store of knowledge a fair return for their labors." *Id.* at 545-46. Research and development of original software is expensive and time-consuming, but making and distributing emulation products by copying, using, and then reverse engineering the original software can be done quickly and inexpensively. Thus, the Ninth Circuit rule permits free-riding competitors to siphon off the originator's fair return soon after the original is released.[11/]

The questions at issue in this case have worried courts and commentators for several years. *See, e.g.*, Joe L. Gage, *Copyright Law and Reverse Engineering: Have Recent Decisions Taken the Fair Out of Use?*, 46 Baylor L. Rev. 183, 184, 193, 199 (1994) (noting that the Ninth Circuit's *Sega* decision "befuddled the computer industry" when it "radically altered the traditional approach" and "substantially modif[ied] the Fair Use Doctrine's application"); John A. Williams, *Can Reverse Engineering of Software Ever Be Fair Use?*, 71 Wash. L. Rev. 255, 261 (1996) (discussing the "current uncertainty as to how fair use should apply, if at all, to reverse engineering of software").

This Court's guidance is needed here to provide direction to courts applying the fair use defense to the questions presented by new types of copyrighted works, as it has in the past,[12/] and also to provide the predictability needed to promote "the Progress of Science and useful Arts." U.S. Const. art. I, § 8, cl. 8. Under the current state of the law, "uncertainty created by the unpredictable use of the fair use doctrine will

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11/ *See* Mark Aaron Paley, *A Model Software Petite Patent Act*, 12 Santa Clara Computer & High Tech. L.J. 301, 336-37 (1996).

12/ *See, e.g., Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417 (1984) (videotape recorders); *Williams & Wilkins Co. v. United States*, 420 U.S. 376 (1975) (photocopying).

discourage creativity on the part of both initial creators and those who come later to the market." Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works*, 106 Harv. L. Rev. 978, 1021 n.201 (1993) [hereinafter "*Miller*"]. The decision below provides an excellent vehicle for this Court to clarify the scope of the fair use provision and its application to computer programs and other non-traditional works. The questions are squarely and cleanly presented and the Ninth Circuit's broad rule expressly delineated.

I. THIS COURT'S GUIDANCE IS NEEDED TO ADDRESS THE SUBSTANTIAL EXPANSION OF THE FAIR USE DEFENSE TO COPYRIGHT INFRINGEMENT ADOPTED BELOW.

A. The Ninth Circuit's Separate Fair Use Rule for Software Is Inconsistent with This and Other Courts' Decisions Interpreting the Doctrine.

The Ninth Circuit has erected what amounts to a *per se* rule that intermediate copying of software code is always a fair use, as long as the product ultimately produced does not contain substantially similar code – *even* when the copier's purpose is to derive and sell competing emulation programs that supplant the copyrighted work. The Ninth Circuit sets forth and relies on an irrebuttable presumption – that replacement of the copied, original code with different code is inherently "transformative" – to flip the commercial use and market impact factors in the fair use calculus from negatives to positives and to mutate the application of the other statutory factors. In doing so, the Ninth Circuit radically departed from settled interpretation of the enumerated factors and the overall role of the fair use provision, 17 U.S.C. § 107, Pet. App. 52a.

Previously, as this Court has recognized, "the fair use

doctrine has always precluded a use that supersedes the original." *Harper & Row*, 471 U.S. at 550 (quotation and citation omitted). "Fair use, when properly applied, is limited to copying by others which does not materially impair the marketability of the work which is copied." *Id.* at 566-67 (quotation and citation omitted); *see also Twin Peaks Productions, Inc. v. Publications Int'l, Ltd.*, 996 F.2d 1366, 1377 (2d Cir. 1993) (Newman, J.) ("In the cases where we have found the fourth factor to favor a defendant, the defendant's work filled a market niche that the plaintiff simply had no interest in occupying."); *American Geophysical Union v. Texaco Inc.*, 60 F.3d 913, 922 (2d Cir. 1994) ("courts will not sustain a claimed defense of fair use when the secondary use can fairly be characterized as a form of 'commercial exploitation,' i.e., when the copier directly and exclusively acquires conspicuous financial rewards from its use of the copyrighted material").

In contrast, the Ninth Circuit deemed the fact that Connectix's emulation software is a substitute for Sony's, such that Sony will lose sales and profits to Connectix, to be a public benefit, and thus an argument in favor of finding fair use. Pet. App. 21a. Under the Ninth Circuit's reasoning, a "transformative" use is excused as fair use even when the copying party intended to supplant the infringed work, engages in direct competition to do so, and adversely affects the market for the copyright holder's product. Indeed, not only emulator computer programs, but any use deemed "transformative," would be exempt from analysis under the fourth statutory fair use factor: market impact. Thus, under Ninth Circuit law, the market impact factor – arguably the central statutory factor Congress directed courts to consider in evaluating whether an infringement should be excused as a fair use – has been written out of the statute with respect to any infringement that is found at least "modestly transformative."

The Ninth Circuit's approach to the first factor – the purpose and character of the use – was similarly driven. The court's broad holding that copying and commercially using an entire computer program is invariably "transformative" if used to make an end product that is not itself a copy, *id.* at 19a, is counter to this Court's teaching that this "task is not to be simplified with bright-line rules, for the statute, like the doctrine it recognizes, calls for case-by-case analysis." *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 577 (1994); *id.* at 581 (rejecting claim that even use for parody or news reporting is presumptively fair). The Ninth Circuit's approach is also in tension with traditional fair use jurisprudence, which explicitly or implicitly approaches the question of transformative use in light of the copyright holder's potential market. Thus, this Court explained: "The crux of the profit/nonprofit distinction is . . . whether the user stands to profit from exploitation of the copyrighted material without paying the customary price." *Harper & Row*, 471 U.S. at 562. Parody and reviews have frequently been found transformative because they add messages and meaning the original author is unlikely to undertake or realize profits from. *See Twin Peaks*, 996 F.2d at 1377 (authors rarely write parodies or reviews of their own works). Nonetheless, uses that are transformative, but that authors are likely to undertake and realize profits from, have long been recognized as unexcused infringements, notwithstanding the creativity involved or the new meaning and expression added – *e.g.*, movies made from novels, theater productions from plays, orchestral performances from musical scores, foreign language versions of books. *See, e.g.*, 17 U.S.C. § 106.

The court of appeals also avoided the import of the third factor – the amount and substantiality of the portion used – based on its conclusion that the ultimate use was "transformative." It was conceded that Connectix had copied

the entire copyrighted work, repeatedly and without authorization. But, although the Ninth Circuit realized these facts required it to find that this factor favored the copyright holder, it assigned the factor very little weight because the end product was *transformative*. The Ninth Circuit cited *Sony Corp. v. Universal City Studios* for its right to assign the factor less weight, but disregarded the basis on which this Court did so in that case. In *Sony Corp.*, the fact that the copying at issue was of an entire work was assigned less weight because the use was "noncommercial, nonprofit activity" and had "no demonstrable effect upon the potential market for, or the value of, the copyrighted work." 464 U.S. 417, 449-50 (1984). The Ninth Circuit's decision to discount the factor here – where the use at issue is commercial, for-profit activity that has had, and will continue to have, an undisputed adverse effect on the market for the copyrighted work – finds scant support in *Sony Corp.*, and simply reflects that court's view that full rights should not extend to software. Pet. App. 17a.

The Ninth Circuit's approach to the remaining factor – the nature of the work – is equally inconsistent with long-standing jurisprudence. That factor has long been understood to distinguish between creative works and those that are largely factual material gathered from the public domain. *See, e.g., Stewart v. Abend*, 495 U.S. 207, 237 (1990). The Ninth Circuit, however, took this factor as an opportunity to impose its own views of what copyright protection should extend to computer programs and to carve a *per se* exception out of the statute, unrelated to the degree of creativity represented by the copyrighted work. Pet. App. 11a (programs lie "at a distance from the core" of copyright protection because they contain "unprotected aspects that cannot be examined without copying").

By distorting the factors courts have traditionally used to

determine when to apply the fair use defense – factors that Congress has codified – the Ninth Circuit dichotomized the fair use provision, and transformed the defense as it applies to computer programs into a right of access that Congress did not enact, and which has no parallel in copyright law. As this Court has recognized, copyright law – in contrast to patent law, for example – does not impose any requirements on authors to provide access to their works. *See Stewart v. Abend*, 495 U.S. at 228-29 ("nothing in the copyright statutes would prevent an author from hoarding all of his works during the term of the copyright. In fact, this Court has held that a copyright owner has the capacity arbitrarily to refuse to license one who seeks to exploit the work.").

The Ninth Circuit's *per se* right of access to computer programs also disregards the "sensitive balancing of interests" required under the fair use provision. *Sony Corp.*, 464 U.S. at 455 n.40. Computer programs, like all copyrighted works, include both protectable and unprotectable aspects, but for computer programs, neither of these may be easily read by people. Wherever the line between them is drawn, permitting competitors to copy the entire work denies the copyright holder his statutory right to protection of the protectable aspects as well as any control over unprotectable aspects. Conversely, denying competitors the right to copy the work allows the copyright holder to enjoy, as a practical matter, protection of both. The court below was so concerned that unprotectable aspects were enjoying *de facto* protection that it wholly discounted the value of protecting the copyrightable aspects.

This Court's settled jurisprudence requires a more discerning test. If copying, by disassembly or other method, is to be permitted at all, it must be permitted only when it serves desirable purposes consistent with copyright's goals. In carving its *per se* exception to copyright protection for

computer programs, the Ninth Circuit wholly disregarded the fundamental premise of copyright, that "the creative activity of authors and inventors" is motivated "by the provision of a special reward." *Harper & Row*, 471 U.S. at 546. The very "purpose of copyright is to create incentives for creative effort." *Sony Corp.*, 464 U.S. at 450. Thus, whatever "limitations and conditions on copyright" are imposed in the public interest, "they should not be so burdensome and strict as to deprive authors of their just reward." *Stewart v. Abend*, 495 U.S. at 229 (quotation and citation omitted).[13/]

Thus, the primary considerations in a proper case-by-case determination would be the likely effect of the claimed fair use on the market for the copyright holder's product and the degree to which copying permits a later arrival to free-ride on the creative efforts, and investment, of the copyright holder. In appropriate cases, considerations might include the effect of excusing copying on the author's other intellectual property protections, such as trade secret or trademark; whether the copier has emulated the entire work, or only a portion; and whether the copier had independently created commercially significant portions of its own product unrelated to the work he copied. Further considerations would likely be suggested by the circumstances of individual cases. Throughout, however, courts should balance interests in light of the basic premise underlying copyright – that ensuring a special reward for

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13/ The Ninth Circuit's premise that its rule is needed to avoid a possible Sony "monopoly" is not supported by either antitrust law or copyright law. Sony's offering of its PlayStation® console and games involves no conduct or circumstances in violation of this country's extensive antitrust laws, nor did the court below suggest otherwise. Moreover, the limited control over reproduction rights in its BIOS program that Sony is attempting to preserve is precisely what the Copyright Act is intended to confer in order "to motivate creative activity of authors and inventors by the provision of a special reward." *Id.* at 228 (quotation and citation omitted).

authors by protecting them from free-riding is the most effective means "To promote the Progress of Science and useful Arts." U.S. Const. art. I, § 8, cl. 8.[14/]

Considered in light of the central interests underlying copyright law, copying to make emulation software, such as the copying below, presents the easiest case. It is pure free-riding, using the protected work to develop a substitute far more quickly and inexpensively than the original, and siphoning the copyright holder's "special reward" by directly competing with the copied work. The Ninth Circuit's holding that this infringement is excused as fair use, and its promulgation of a broad, *per se* exception to the copyright protection available to computer programs, are irreconcilable with the fundamental goals of copyright law, as well as with previously settled application of the fair use defense.

B. The Ninth Circuit's Decision Is Antagonistic To, and Undermines, Congress's Recognition of Copyright Protection for Computer Programs.

The *per se* rule adopted below contravenes Congress's decision to recognize general copyright protection for computer

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14/ Enjoining a non-infringing end product developed using infringing materials is entirely consistent with traditional copyright law jurisprudence. *See, e.g., Robert R. Jones Assocs., Inc. v. Nino Homes*, 858 F.2d 274, 280 (6th Cir. 1988) ("one may construct a house which is identical to a house depicted in copyrighted architectural plans, but one may not directly copy those plans and then use the infringing copy to construct the house" and therefore "the damages recoverable by the copyright owner include the losses suffered as a result of the infringer's subsequent use of the infringing copies"); *Southern Bldg. Code Congress Int'l, Inc. v. Florida Constr. Sch., Inc.*, 14 U.S.P.Q.2d 1846, 1848 (M.D. Fla. 1989) (permanently enjoining defendant from "creating any work derived from" a copyrighted exam it had copied without authorization, whether or not the end product includes copied material).

programs and its determinations as to which specified exceptions are appropriate. *See* 17 U.S.C. § 102(a), § 101 (defining "computer program" as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result"), § 117 (specifying the limitations on the exclusive rights conferred by a copyright in a computer program). Although computer programs were arguably already protected under copyright as literary works, in 1974 Congress created the Commission on New Technological Uses of Copyrighted Works (CONTU) to recommend changes in copyright law needed "to assure public access to copyrighted works used in conjunction with computer[s]" and "to respect the rights of owners of copyrights in such works, while considering the concerns of the general public and the consumer." Final Report of the National Commission on New Technological Uses of Copyrighted Works 1, 4 (July 31, 1978) [hereinafter "*CONTU Report*"].

In 1980, Congress enacted CONTU's recommendations,[15/] expressly recognizing full copyright protection for computer programs, with three limitations. Software owners are permitted to access the software in their computers in order to make use of the programs, even though this copies the programs into the computer's temporary memory; they are permitted to adapt the software to operate in the way it is intended to operate; and they are permitted to make a backup

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15/ *See* Pub. L. No. 96-517, § 10, 94 Stat. 3015, 3028 (1980). Congress's only deviation from the recommendations was to change "rightful possessor" to "owner" in the new Section 117. *Cf. CONTU Report* at 12.

copy for safekeeping. 17 U.S.C. § 117 (1994).[16] In recommending these limitations, CONTU considered what adaptations of copyright law would be necessary to accommodate the distinct characteristics of computer programs in light of the value of protecting "the interests of the copyright proprietor" in order "to encourage the creation and broad distribution of computer programs in a competitive market." *CONTU Report* at 13, 11.[17]

CONTU also expressly considered the characteristic of software that concerned the Ninth Circuit: that the unprotected aspects of a computer program cannot be accessed without copying the protected aspects. CONTU reported to Congress that the effect of extending copyright protection to computer programs would be to preclude public access to unprotected aspects of the computer programs, but it did not recommend that Congress enact any exceptions to change this result, and Congress did not. CONTU's report to Congress on this issue was unambiguous. CONTU explained that, although others are free to make machines perform any process they choose if they independently invent the software to do so, they are not free to use copyrighted software in the effort. *Id.* at 20. The Commission also specified that copying a computer program without authorization "to produce a printed, human-readable version of the program" would be "an infringement." *Id.* at 22.

16/ In 1998, Congress added one further exception. Computer owners (or lessees) may authorize service companies to activate their computers – even though that automatically creates copies of some software – in order to maintain or repair the machines. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified as § 117(c)-(d)).

17/ The CONTU Report is widely regarded as part of the legislative history of the 1980 amendments. *See, e.g., Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240 (3d Cir. 1983).

CONTU pointed out that "under the present state of technology," there is no way to access the underlying process embodied in a computer program without violating the author's copyright and that members of the public would only be able to gain access to the underlying process – without incurring liability for infringement – if they developed a method for tapping off the "electrical impulses . . . sent through the circuitry of the processor to initiate work." *Id.* "If," the Commission speculated, "it should prove possible to tap off these impulses then, perhaps, the process would be all that was appropriated, and no infringement of the copyright would occur." *Id.* Unless and until the technology to do so existed, the Commission informed Congress, under its recommended provisions "copyright leads to the result that anyone is free to make a computer carry out any unpatented process, but not to misappropriate another's writing to do so." *Id.*

CONTU rejected any need to exempt copying to obtain a human-readable version of a program, or to perform other reverse engineering techniques, and rejected any need for special anti-monopoly rules. *Id.* at 12, 25. Congress accepted the Commission's recommendations and enacted the draft provisions set forth in its report. *See* Pub. L. No. 96-517; H.R. Rep. No. 96-1307 at 23-24 (1980), *reprinted in* 1980 U.S.C.C.A.N. 6460, 6482-83 (the legislation "embodies the recommendations of [CONTU] with respect to clarifying the law of copyright of computer software"); *see also Miller* at 1013 ("exceptions to copyright law for the decompilation of programs . . . [were] reject[ed] by CONTU and Congress at the time copyright was chosen as the appropriate vehicle for software protection.").[18/]

18/ Professor Miller was a member of CONTU, and served on its subcommittee on computer software. *Miller* at 981; *CONTU Report* at 4, 6.

In doing so, Congress also rejected the exhortations of a Commission dissenter who expressed concern that people could not read computer programs, warned that larger companies would lock their software into their own hardware and prevent independents from selling programs for use in all hardware, and urged Congress not to provide copyright protection to computer programs in their machine-readable form. *See CONTU Report* at 1; *see also id.* at 30, 36, 37 (Hersey, dissenting). The Ninth Circuit, by distorting the fair use defense into permission to infringe copyrighted computer programs in machine-readable format, arrogated the power to itself to enact, in large measure, the very provision that Hersey urged – despite Congress's decision to reject it.[19/]

The Ninth Circuit's new *per se* rule does not fit the

19/ In subsequent legislation, Congress has enacted limited exceptions for reverse engineering in provisions not directly governing copyright protection for computer programs, but has expressly declined to enact the broad exception the Ninth Circuit adopted below. *See, e.g.*, H.R. Rep. No. 98-781 at 28 (1984), *reprinted in* 1984 U.S.C.C.A.N. 5750, 5777 (explaining that the separate, *sui generis* protection enacted for semiconductor chips, that permits reverse engineering of chips under certain circumstances, does not change the copyright protection available to *computer software*); H.R. Rep. No. 102-997 at 5 n.15 (1992), *reprinted in* 1992 U.S.C.C.A.N. 3569, 3573 (emphasizing the same point in a later amendment to the Semiconductor Chip Protection Act); 17 U.S.C. § 1201(f) (providing exceptions to legislation that prohibits circumvention of technological measures that control access to or otherwise protect copyrighted works, by permitting circumvention by authorized users of computer programs – but only for the purpose of "identifying and analyzing those elements of the program that are necessary to achieve interoperability of an *independently created computer program* with other programs," and only "to the extent any such acts of identification and analysis do not constitute infringement") (emphasis added); *see also* 1 Melville B. Nimmer & David Nimmer, *Nimmer on Copyright* § 12A.04[C][3], at 12A-42 (Matthew Bender & Co. 1999) (explaining that § 1201(f) provides a narrower exception than provided under the reasoning of *Sega*).

contours of the fair use provision and stands in contrast to the provisions Congress itself has enacted – especially where it excuses, as it did below, copying of an entire computer program for the purpose of making emulation software that competes directly, as a substitute, for the copyright holder's creative work. This Court should grant certiorari to address the significant change in copyright law the Ninth Circuit has undertaken to impose, and to provide guidance to courts addressing new technologies presenting new problems in order to prevent the fair use defense from being distorted even further from the fundamental copyright goals it is intended to serve.

II. EVEN IF THIS COURT FINDS DISASSEMBLY OF OBJECT CODE EXCUSABLE, IT SHOULD GRANT CERTIORARI TO RESOLVE THE CONFLICT BETWEEN THE CIRCUITS AS TO THE LEGAL STATUS OF ADDITIONAL, UNNECESSARY USES.

Even if this Court were to accept the Ninth Circuit's new *per se* rule that infringement of copyrighted software for the purpose of gaining access to its unprotected aspects is invariably excused as fair use, the additional holding below raises a serious issue that further undermines the Copyright Act's protection of computer programs. The Court held that additional, unnecessary copying of software for related product development or marketing is also justified as fair use because it is "efficient" for the copier to do so – a view other courts, including the Federal Circuit, have rejected. By expanding the fair use defense to permit the *unnecessary* duplication of copyrighted computer programs – without regard to the purpose of that copying – so long as the copier also has an interest in disassembling the software, the court below has eliminated much of the copyright protection for computer software that Congress conferred. The rule adopted by the court below, based on the efficiency of copying over other alternatives,

conflicts with rules adopted by other circuits.

A. The Ninth Circuit's Decision Is Inconsistent with Those of Other Courts.

The court below found Connectix's repeated copying of Sony's BIOS a fair use, even though the purpose of much of that copying was simply to hasten the development of Connectix's imitation product, rather than to examine the Sony program's unprotected elements through disassembly. As the district court found, Connectix's engineers did not merely disassemble Sony's code to determine how it worked. "They actually used that code in the development of defendant's product." Pet. App. 41a. For example, Connectix copied Sony's BIOS to make software that imitates the PlayStation® hardware, even though Connectix could have first written its own BIOS code (based on disassembling Sony's) and constructed the other portions of its product by using that code. *Id.* at 14a-15a & n.8, 31a, 41a. The district court also found that "Connectix demonstrated and promoted its 'substitute' PlayStation product with Sony's BIOS in the VGS prototype." *Id.* at 39a. Connectix began development of its own BIOS only in October of 1998, after it had completed its software that emulates the PlayStation® console's hardware and then asked for, and was denied, technical assistance from Sony. *Id.* at 32a. The court of appeals did not overturn either finding. In addition, both courts below found that Connectix used copies of the Sony BIOS to debug its imitation software. *Id.* at 7a, 15a & n.8. The court of appeals found that Connectix was also using copies of the Sony BIOS to make emulation software for Windows-based computers, rather than using its own version of the BIOS that was already on the market. *Id.* at 7a.

This additional unauthorized copying did not arise out of the fact that Sony's BIOS was machine-readable; it arose out of Connectix's desire to make an imitation product as quickly

and cheaply as possible by using the work created by Sony engineers. *Id.* at 15a & n.8. That result directly conflicts with the Federal Circuit's decision in *DSC Communications Corp. v. Pulse Communications, Inc.*, 170 F.3d 1354 (Fed. Cir.), *cert. denied*, 120 S. Ct. 286 (1999). In contrast to the decision below, *DSC v. Pulse* held that copying of software was not fair use when it was used for something beyond the limited purpose of "determin[ing] how the system functioned." *DSC v. Pulse*, 170 F.3d at 1363 (applying Fourth Circuit law to find that Pulse's copying of plaintiff's software was not fair use because it was undertaken, not to find out how the software worked, but "as part of the ordinary operation of those cards . . . to demonstrate the interchangeability of [defendant's] cards with those made and sold by DSC").[20/]

Whatever the argument for inserting an exception into copyright law to provide access to the unprotectable elements of computer code, there is no basis for bootstrapping that permission into a right to copy computer programs for virtually *any* purpose. The decision below stands alone in excusing as fair use copying of computer software regardless of its necessity to examine the unprotected elements of a copyrighted

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20/ *See also Atari Games*, 975 F.2d at 843-44 (applying then-current Ninth Circuit law to warn that "copying beyond that necessary to understand" a program is not permitted and that plaintiff "could not use reverse engineering as an excuse to exploit commercially or otherwise misappropriate protected expression"); *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 831 F. Supp. 223, 243 (D. Mass. 1993) (in case involving copying of interface elements, not code, the trial court held that the "copying was not necessary to examine unprotected aspects" of the copyrighted software and therefore not fair use), *rev'd on other grounds*, 49 F.3d 807 (1st Cir. 1995), *aff'd by an equally divided court*, 516 U.S. 233 (1996); *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1565-67 (Fed. Cir. 1993) (imposing same limits on reverse engineering defense in the semiconductor chip context).

program. The Ninth Circuit's implicit adoption of a bright-line rule – permitting additional, unnecessary copying of software code whenever the copier also has copied the software to study its functional elements – directly contravenes the "case-by-case" fair use analysis this Court requires. *See Campbell*, 510 U.S. at 577 (citing, *inter alia*, *Harper & Row*, 471 U.S. at 560; *Sony Corp.*, 464 U.S. at 448 & n.31). Further, the rule undermines the fundamental purpose of copyright: "to create incentives for creative effort." *Sony Corp.*, 464 U.S. at 450.

The court below sidestepped Connectix's copying and use of Sony's BIOS to make both its hardware emulation software for the Macintosh and its hardware emulation software for Windows-based computers, despite full recognition that both products could have been developed without further copying the Sony BIOS. Pet. App. 7a, 14a-15a & n.8. The court labeled this *factually unnecessary* copying as *legally necessary* on the ground that copying Sony's BIOS was a more efficient method for making an imitation product than other time-consuming and expensive software development techniques that did not involve copying the protected computer program. *Id.* at 16a. The Ninth Circuit thereby excused precisely the behavior that copyright laws exist to prevent: the unauthorized copying of protected expression for commercial exploitation. *Cf. American Geophysical Union*, 60 F.3d at 922, 932 (copying for convenience of use not excused as fair use); *Princeton University Press v. Michigan Document Services, Inc.*, 99 F.3d 1381 (6th Cir. 1996) (sale of course packs of copied materials was commercial exploitation of the copyrighted materials and did not constitute fair use).

The Ninth's Circuit indefensible decision is far-reaching, not only because that court of appeals hears a significant portion of the copyright cases involving computer programs, but also because of that circuit's influence in

intellectual property law. Under its rule, because almost all computer software when released contains some unprotected elements not readable by humans, *see* 4 Melville B. Nimmer & David Nimmer, *Nimmer on Copyright* § 13.05[D][4], at 13-225-226 (Matthew Bender & Co. 2000), any competitor can invoke a need to access those elements to freely duplicate the software for other unnecessary purposes without fear of liability.

B. The Rule Is Also Inconsistent with Congress's Decision to Grant Only Narrow, Highly Specific Exceptions to Copyright Protection of Computer Programs.

The Ninth Circuit's broad permission to copy computer programs also contravenes clear congressional intent to provide only carefully delimited exceptions to the copyright protection conferred on computer programs, notwithstanding the unique issues presented by the technology. None of Connectix's additional copying falls within those exceptions. *See* 17 U.S.C. § 117. And the court's wholesale grant of immunity to copiers of computer programs is irreconcilable with the approach Congress has consistently chosen.

Congress has provided only four narrow exceptions to the exclusive right of reproduction provided by copyright law for computer programs. Following the Commission's recommendation, Congress enacted an exception for the copying of software that occurs when a computer accesses software in order to allow the owner to operate it, but specified that the exception applies only so long as "it is used in no other manner." § 117(a)(1). Congress also adopted CONTU's recommendation that it permit software owners to adapt the software to their own needs, but only "to make those changes necessary to enable the use for which it was both sold and purchased," and the recommendation that "[t]he adaptor could

not vend the adapted program . . . nor could it be sold as the original without the author's permission." *CONTU Report* at 13; *see also* § 117(b) (specifying that even copies "prepared in accordance with the provisions of this section" may be leased, sold, or otherwise transferred only "as part of the lease, sale, or other transfer of all rights in the program" and that adaptations may be transferred only with the copyright holder's consent).

Congress's recent amendment to § 117 further demonstrates how narrowly Congress intended exceptions to copyright protection of computer programs to be construed. Congress enacted a very specific exception to permit computer maintenance companies to service computers without infringing the copyrights of software installed on the machine being serviced. This was a concern because at least some computer programs are automatically copied into the computer's memory when the computer is turned on, and determining whether the computer is functioning correctly requires using at least the operating system program. In drafting this exception, however, Congress expressly limited it: it is available only if "such new copy is used in no other manner and is destroyed immediately after the maintenance or repair is completed." § 117(c)(1). Further, service providers are specifically denied permission to *use*, in any other manner, diagnostic or other software installed on the machines. Any provider who does use such software is liable for infringement. § 117(c)(2); S. Rep. No. 105-190, at 57-58 (Senate Judiciary Committee May 11, 1998), 1998 WL 239623.[21/]

21/ "[A]s is made clear in paragraph (c)(2), the amendment is not intended to diminish the rights of copyright owners of those computer programs, or parts thereof, that also may be loaded into RAM when the computer is turned on, but which did not need to be so loaded in order for the machine to be turned on. A hardware manufacturer or software developer might, for example, provide diagnostic and utility programs that

The Conference Committee emphasized that the addition was "narrowly crafted to . . . ensur[e] that an independent service provider may turn on a client's computer machine in order to service its hardware components," and that the restraints imposed on service providers are "designed to protect the rights of copyright owners of computer software." H. Conf. Rep. No. 105-796 (1998), *reprinted in* 1998 U.S.C.C.A.N. 639, 652. The Ninth Circuit's indifference to Congress's determination to recognize full copyright protection for computer programs, with only specified and carefully delineated exceptions, and that court's substitution of its own policy views for those of Congress, is inappropriate in itself as well as in conflict with other courts.

This Court's review is needed to clarify the applicability of the fair use defense to infringement of software copyrights and to resolve the conflicts among the lower courts with respect to these questions. The case also provides a good opportunity for the Court to provide needed guidance in applying the fair use factors to new and rapidly changing technologies.

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load into RAM along with or as part of the operating system, even though they market those programs as separate products – either as freestanding programs, or pursuant to separate licensing agreements.... This subsection is not intended to derogate from the rights of the copyright owners of such programs. In order to avoid inadvertent copyright infringement, these programs need to be covered by subsection (c), but only to the extent that they are automatically reproduced when the machine is turned on. This subsection is not intended to legitimize unauthorized access to and use of such programs just because they happen to be resident in the machine itself and are reproduced with or as a part of the operating system when the machine is turned on." *Id.*

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted,

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APPENDIX A

SONY COMPUTER ENTERTAINMENT INC., a Japanese corporation; Sony Computer Entertainment America, Inc., a Delaware corporation, Plaintiffs-Appellees,

v.

CONNECTIX CORPORATION, a California corporation, Defendant-Appellant.

No. 99-15852

UNITED STATES COURT OF APPEALS,
FOR THE NINTH CIRCUIT

Filed Feb. 10, 2000

Before: CHOY, CANBY, Jr. and SILVERMAN, Circuit Judges.

CANBY, Circuit Judge: In this case we are called upon once again to apply the principles of copyright law to computers and their software, to determine what must be protected as expression and what must be made accessible to the public as function. Sony Computer Entertainment, Inc., which brought this copyright infringement action, produces and markets the Sony PlayStation console, a small computer with hand controls that connects to a television console and plays games that are inserted into the PlayStation on compact discs (CDs). Sony owns the copyright on the basic input-output system or BIOS, which is the software program that operates its PlayStation. Sony has asserted no patent rights in this proceeding.

The defendant is the Connectix Corporation, which makes and sells a software program called "Virtual Game Station." The purpose of the Virtual Game Station is to emulate on a regular computer the functioning of the Sony PlayStation console, so that computer owners who buy the Virtual Game Station

software can play Sony PlayStation games on their computers. The Virtual Game Station does not contain any of Sony's copyrighted material. In the process of producing the Virtual Game Station, however, Connectix repeatedly copied Sony's copyrighted BIOS during a process of "reverse engineering" that Connectix conducted in order to find out how the Sony PlayStation worked. Sony claimed infringement and sought a preliminary injunction. The district court concluded that Sony was likely to succeed on its infringement claim because Connectix's "intermediate copying" was not a protected "fair use" under 17 U.S.C. § 107. The district court enjoined Connectix from selling the Virtual Game Station or from copying or using the Sony BIOS code in the development of other Virtual Game Station products.

Connectix now appeals. We reverse and remand with instructions to dissolve the injunction. The intermediate copies made and used by Connectix during the course of its reverse engineering of the Sony BIOS were protected fair use, necessary to permit Connectix to make its non-infringing Virtual Game Station function with PlayStation games. Any other intermediate copies made by Connectix do not support injunctive relief, even if those copies were infringing.

The district court also found that Sony is likely to prevail on its claim that Connectix's sale of the Virtual Game Station program tarnishes the Sony PlayStation mark under 15 U.S.C. § 1125. We reverse that ruling as well.

I. BACKGROUND

A. The Products

Sony is the developer, manufacturer and distributor of both the Sony PlayStation and Sony PlayStation games. Sony also licenses other companies to make games that can play on the PlayStation. The PlayStation system consists of a console

(essentially a mini-computer), controllers, and software that produce a three-dimensional game for play on a television set. The PlayStation games are CDs that load into the top of the console. The PlayStation console contains both (1) hardware components and (2) software known as firmware that is written onto a read-only memory (ROM) chip. The firmware is the Sony BIOS. Sony has a copyright on the BIOS. It has claimed no patent relevant to this proceeding on any component of the PlayStation. PlayStation is a registered trademark of Sony.

Connectix's Virtual Game Station is software that "emulates" the functioning of the PlayStation console. That is, a consumer can load the Virtual Game Station software onto a computer, load a PlayStation game into the computer's CD-ROM drive, and play the PlayStation game. The Virtual Game Station software thus emulates both the hardware and firmware components of the Sony console. The Virtual Game Station does not play PlayStation games as well as Sony's PlayStation does. At the time of the injunction, Connectix had marketed its Virtual Game Station for Macintosh computer systems but had not yet completed Virtual Game Station software for Windows.

B. Reverse Engineering

Copyrighted software ordinarily contains both copyrighted and unprotected or functional elements. *Sega Enters. Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1520 (9th Cir. 1992) (amended opinion); *see* 17 U.S.C. § 102(b) (Copyright protection does not extend to any "idea, procedure, process, system, method of operation, concept, principle, or discovery" embodied in the copyrighted work.). Software engineers designing a product that must be compatible with a copyrighted product frequently must "reverse engineer" the copyrighted product to gain access to the functional elements of the copyrighted product. *See* Andrew Johnson-Laird, *Software Reverse Engineering in the Real World*, 19 U. Dayton L. Rev. 843, 845-46 (1994).

Reverse engineering encompasses several methods of gaining access to the functional elements of a software program. They include: (1) reading about the program; (2) observing "the program in operation by using it on a computer;" (3) performing a "static examination of the individual computer instructions contained within the program;" and (4) performing a "dynamic examination of the individual computer instructions as the program is being run on a computer." *Id.* at 846. Method (1) is the least effective, because individual software manuals often misdescribe the real product. *See id.* It would be particularly ineffective in this case because Sony does not make such information available about its PlayStation. Methods (2), (3), and (4) require that the person seeking access load the target program on to a computer, an operation that necessarily involves copying the copyrighted program into the computer's random access memory or RAM.[1/]

Method (2), observation of a program, can take several forms. The functional elements of some software programs, for example word processing programs, spreadsheets, and video game displays may be discernible by observation of the

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[1]Any purchaser of a copyrighted software program must copy the program into the memory of a computer in order to make any use at all of the program. For that reason, 17 U.S.C. § 117(a)(1) provides that it shall not be an infringement for one who owns a software copy to make another copy "created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner." Connectix contends that its copying is within the protection of section 117, but our disposition of the fair use issue makes it unnecessary for us to address that contention. *See Sega*, 977 F.2d at 1517-18 (rejecting contention that disassembly is protected by section 117).

computer screen. *See Sega*, 977 F.2d at 1520. Of course, the reverse engineer in such a situation is not observing the object code itself,[2] only the external visual expression of this code's operation on the computer. Here, the software program is copied each time the engineer boots up the computer, and the computer copies the program into RAM.

Other forms of observation are more intrusive. Operations systems, system interface procedures, and other programs like the Sony BIOS are not visible to the user when they are operating. *See id.* One method of "observing" the operation of these programs is to run the program in an emulated environment. In the case of the Sony BIOS, this meant operating the BIOS on a computer with software that simulated the operation of the PlayStation hardware; operation of the program, in conjunction with another program known as a "debugger," permitted the engineers to observe the signals sent between the BIOS and other programs on the computer. This latter method required copying the Sony BIOS from a chip in the PlayStation onto the computer. The Sony BIOS was copied again each time the engineers booted up their computer and the computer copied the program into RAM. All of this copying was intermediate; that is, none of the Sony copyrighted material was copied into, or appeared in, Connectix's final product, the Virtual Game Station.

Methods (3) and (4) constitute "disassembly" of object code into source code.[3] In each case, engineers use a program

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[2]Object code is binary code, consisting of a series of the numerals zero and one, readable only by computers.

[3]Source code is readable by software engineers, but not by computers.

known as a "disassembler" to translate the ones and zeros of binary machine-readable object code into the words and mathematical symbols of source code. This translated source code is similar to the source code used originally to create the object code[4] but lacks the annotations drafted by the authors of the program that help explain the functioning of the source code. In a static examination of the computer instructions, method (3), the engineer disassembles the object code of all or part of the program. The program must generally be copied one or more times to perform disassembly. In a dynamic examination of the computer instructions, method (4), the engineer uses the disassembler program to disassemble parts of the program, one instruction at a time, while the program is running. This method also requires copying the program and, depending on the number of times this operation is performed, may require additional copying of the program into RAM every time the computer is booted up.

C. Connectix's Reverse Engineering Of The Sony BIOS

Connectix began developing the Virtual Game Station for Macintosh on about July 1, 1998. In order to develop a PlayStation emulator, Connectix needed to emulate both the PlayStation hardware and the firmware (the Sony BIOS).

Connectix first decided to emulate the PlayStation's hardware. In order to do so, Connectix engineers purchased a Sony PlayStation console and extracted the Sony BIOS from a chip inside the console. Connectix engineers then copied the Sony BIOS into the RAM of their computers and observed the

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[4]Software is generally written by programmers in source code (and in other more conceptual formats) and then assembled into object code.

functioning of the Sony BIOS in conjunction with the Virtual Game Station hardware emulation software as that hardware emulation software was being developed by Connectix. The engineers observed the operation of the Sony BIOS through use of a debugging program that permitted the engineers to observe the signals sent between the BIOS and the hardware emulation software. During this process, Connectix engineers made additional copies of the Sony BIOS every time they booted up their computer and the Sony BIOS was loaded into RAM.

Once they had developed the hardware emulation software, Connectix engineers also used the Sony BIOS to "debug" the emulation software. In doing so, they repeatedly copied and disassembled discrete portions of the Sony BIOS.

Connectix also used the Sony BIOS to begin development of the Virtual Game Station for Windows. Specifically, they made daily copies to RAM of the Sony BIOS and used the Sony BIOS to develop certain Windows-specific systems for the Virtual Game Station for Windows. Although Connectix had its own BIOS at the time, Connectix engineers used the Sony BIOS because it contained CD-ROM code that the Connectix BIOS did not contain.

Early in the development process, Connectix engineer Aaron Giles disassembled a copy of the entire Sony BIOS that he had downloaded from the Internet. He did so for the purpose of testing a "disassembler" program he had written. The print-out of the source code was not used to develop the Virtual Game Station emulator. Connectix engineers initially used this copy of the Sony BIOS to begin the reverse engineering process, but abandoned it after realizing that it was a Japanese-language version.

During development of the Virtual Game Station, Connectix contacted Sony and requested "technical assistance" from Sony

to complete the development of the Virtual Game Station. Connectix and Sony representatives met during September 1998. Sony declined Connectix's request for assistance.

Connectix completed Virtual Game Station for Macintosh computers in late December 1998 or early January 1999. Connectix announced its new product at the MacWorld Expo on January 5, 1999. At MacWorld, Connectix marketed the Virtual Game Station as a "PlayStation emulator." The materials stated that the Virtual Game Station permits users to play "their favorite Playstation games" on a computer "even if you don't yet have a Sony PlayStation console."

D. Procedural History

On January 27, 1999, Sony filed a complaint alleging copyright infringement and other causes of action against Connectix. Sony subsequently moved for a preliminary injunction on the grounds of copyright and trademark infringement. The district court granted the motion, enjoining Connectix: (1) from copying or using the Sony BIOS code in the development of the Virtual Game Station for Windows; and (2) from selling the Virtual Game Station for Macintosh or the Virtual Game Station for Windows. Order on Mot. for Prelim. Inj. at 27. The district court also impounded all Connectix's copies of the Sony BIOS and all copies of works based upon or incorporating Sony BIOS. *Id.* at 27-28. Connectix now appeals from this order.

II. DISCUSSION

To prevail on its motion for injunctive relief, Sony was required to demonstrate "either a likelihood of success on the merits and the possibility of irreparable injury or that serious questions going to the merits were raised and the balance of the hardships tip sharply in its favor." *Cadence Design Sys., Inc. v. Avant! Corp.*, 125 F.3d 824, 826 (9th Cir. 1997) (internal quotation marks and bracket omitted), *cert. denied*, 523 U.S. 1118, 118 S.Ct. 1795, 140 L.Ed.2d 936 (1998). We reverse the grant of a preliminary injunction only when "the district court abused its discretion or based its decision on an erroneous legal standard or on clearly erroneous findings of fact." *Roe v. Anderson*, 134 F.3d 1400, 1402 n. 1 (9th Cir. 1998) (internal quotation marks omitted), *aff'd on other grounds, sub nom. Saenz v. Roe*, 526 U.S. 489, 119 S.Ct. 1518, 143 L.Ed.2d 689 (1999). We review the scope of injunctive relief for an abuse of discretion. *SEC v. Interlink Data Network of L.A., Inc.*, 77 F.3d 1201, 1204 (9th Cir. 1996).

Connectix admits that it copied Sony's copyrighted BIOS software in developing the Virtual Game Station but contends that doing so was protected as a fair use under 17 U.S.C. § 107. Connectix also challenges the district court's conclusion that Sony has established a likelihood that Connectix's Virtual Game Station tarnishes the PlayStation trademark. We consider each of these claims below.

A. Fair Use

The fair use issue arises in the present context because of certain characteristics of computer software. The object code of a program may be copyrighted as expression, 17 U.S.C. § 102(a), but it also contains ideas and performs functions that are not entitled to copyright protection. *See* 17 U.S.C. § 102(b). Object code cannot, however, be read by humans. The

unprotected ideas and functions of the code therefore are frequently undiscoverable in the absence of investigation and translation that may require copying the copyrighted material. We conclude that, under the facts of this case and our precedent, Connectix's intermediate copying and use of Sony's copyrighted BIOS was a fair use for the purpose of gaining access to the unprotected elements of Sony's software.

The general framework for analysis of fair use is established by statute, 17 U.S.C. § 107.[5] We have applied this statute and the fair use doctrine to the disassembly of computer software in the case of *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992) (amended opinion). Central to our decision today is the rule set forth in *Sega*:

> [W]here disassembly is the *only way to gain access to the ideas and functional elements embodied in a copyrighted computer program* and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law.

Id. at 1527-28 (emphasis added). In *Sega*, we recognized that intermediate copying could constitute copyright infringement even when the end product did not itself contain copyrighted material. *Id.* at 1518- 19. But this copying nonetheless could

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[5]The factors for determining fair use include:
(1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work. 17 U.S.C. § 107.

be protected as a fair use if it was "necessary" to gain access to the functional elements of the software itself. *Id.* at 1524-26. We drew this distinction because the Copyright Act protects expression only, not ideas or the functional aspects of a software program. *See id.* at 1524 (citing 17 U.S.C. § 102(b)). We also recognized that, in the case of computer programs, this idea/expression distinction poses "unique problems" because computer programs are "in essence, utilitarian articles--articles that accomplish tasks. As such, they contain many logical, structural, and visual display elements that are dictated by the function to be performed, by considerations of efficiency, or by external factors such as compatibility requirements and industry demands." *Id.* Thus, the fair use doctrine preserves public access to the ideas and functional elements embedded in copyrighted computer software programs. This approach is consistent with the " 'ultimate aim [of the Copyright Act], to stimulate artistic creativity for the general public good.' " *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 432, 104 S.Ct. 774, 78 L.Ed.2d 574 (1984) (quoting *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156, 95 S.Ct. 2040, 45 L.Ed.2d 84 (1975)).

We turn then to the statutory fair use factors, as informed by our precedent in *Sega*.

1. Nature Of The Copyrighted Work

Under our analysis of the second statutory factor, nature of the copyrighted work, we recognize that "some works are closer to the core of intended copyright protection than others." *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 586, 114 S.Ct. 1164, 127 L.Ed.2d 500 (1994). Sony's BIOS lies at a distance from the core because it contains unprotected aspects that cannot be examined without copying. *See Sega*, 977 F.2d at 1526. We consequently accord it a "lower degree of protection than more traditional literary works." *Id.* As we

have applied this standard, Connectix's copying of the Sony BIOS must have been "necessary" to have been fair use. *See id.* at 1524-26. We conclude that it was.

There is no question that the Sony BIOS contains unprotected functional elements. Nor is it disputed that Connectix could not gain access to these unprotected functional elements without copying the Sony BIOS. Sony admits that little technical information about the functionality of the Sony BIOS is publicly available. The Sony BIOS is an internal operating system that does not produce a screen display to reflect its functioning. Consequently, if Connectix was to gain access to the functional elements of the Sony BIOS it had to be through a form of reverse engineering that required copying the Sony BIOS onto a computer.[6] Sony does not dispute this proposition.

The question then becomes whether the methods by which Connectix reverse-engineered the Sony BIOS were necessary to gain access to the unprotected functional elements within the program. We conclude that they were. Connectix employed several methods of reverse engineering (observation and observation with partial disassembly) each of which required

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[6] Connectix offers evidence that it attempted to gain access to the functionality of the Sony BIOS by attaching a "logic analyzer" to the input and output leads of the chip on which the Sony BIOS was located within the PlayStation console. This form of observation does not appear to require the making of an intermediate copy, but was of limited value because it permitted the observation of inter-chip, but not intra-chip signals. Sony does not suggest that this form of observation alone would have permitted Connectix engineers to gain access to the functional elements of the Sony BIOS.

Connectix to make intermediate copies of copyrighted material. Neither of these methods renders fair use protection inapplicable. *Sega* expressly sanctioned disassembly. *See id.* at 1527-28. We see no reason to distinguish observation of copyrighted software in an emulated computer environment. Both methods require the reverse engineer to copy protected as well as unprotected elements of the computer program. Because this intermediate copying is the gravamen of the intermediate infringement claim, *see* 17 U.S.C. § 106(1); *Sega*, 977 F.2d at 1518-19, and both methods of reverse engineering require it, we find no reason inherent in these methods to prefer one to another as a matter of copyright law. Connectix presented evidence that it observed the Sony BIOS in an emulated environment to observe the functional aspects of the Sony BIOS. When this method of reverse engineering was unsuccessful, Connectix engineers disassembled discrete portions of the Sony BIOS to view directly the ideas contained therein. We conclude that intermediate copying in this manner was "necessary" within the meaning of *Sega*.

We decline to follow the approach taken by the district court. The district court did not focus on whether Connectix's copying of the Sony BIOS was necessary for access to functional elements. Instead, it found that Connectix's copying and *use* of the Sony BIOS to develop its own software exceeded the scope of *Sega*. *See* Order at 17 ("[T]hey disassembled Sony's code not just to study the concepts. They actually used that code in the development of [their] product."). This rationale is unpersuasive. It is true that *Sega* referred to "*studying or examining* the unprotected aspects of a copyrighted computer program." 977 F.2d at 1520 (emphasis added). But in *Sega*, Accolade's copying, observation and disassembly of Sega's game cartridges was held to be fair use, even though Accolade "loaded the disassembled code back into a computer, and experimented to discover the interface specifications for the

Genesis console by modifying the programs and studying the results." *Id.* at 1515. Thus, the distinction between "studying" and "use" is unsupported in *Sega*. Moreover, reverse engineering is a technically complex, frequently iterative process. Johnson-Laird, 19 U. Dayton L.Rev. at 843-44. Within the limited context of a claim of intermediate infringement, we find the semantic distinction between "studying" and "use" to be artificial, and decline to adopt it for purposes of determining fair use.[7]

We also reject the argument, urged by Sony, that Connectix infringed the Sony copyright by repeatedly observing the Sony BIOS in an emulated environment, thereby making repeated copies of the Sony BIOS. These intermediate copies could not have been "necessary" under *Sega*, contends Sony, because Connectix engineers could have disassembled the entire Sony BIOS first, then written their own Connectix BIOS, and used the Connectix BIOS to develop the Virtual Game Station hardware emulation software. We accept Sony's factual

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[7] We are unable to locate evidence in the record to support the district court's finding that Connectix "gradually convert[ed] Sony's code to their own code," Order at 11, if by this statement the court meant that Connectix engineers failed to create an original work. True, Connectix engineers admitted to combining the Sony BIOS with the Virtual Game Station hardware emulation software to test and develop the hardware emulation software. But in drafting the Connectix BIOS, Connectix engineers never claimed to do anything other than write their own code, even though they used, observed, copied and sometimes disassembled the Sony BIOS as they did so. Sony presents no evidence to the contrary, nor does Sony contend that Connectix's final product contains infringing material.

predicate for the limited purpose of this appeal.[8] Our doing so, however, does not aid Sony.

With respect to the observation of the Sony BIOS in an emulated environment, Traut admitted that it was easier to use the Sony BIOS to develop the hardware emulation software than to develop Connectix own BIOS first, and then use the Connectix BIOS to develop the hardware emulation software. With respect to the observation of the Sony BIOS with selective disassembly of the code, Traut stated with respect to one bug that there would have been no way to fix the bug without disassembling a portion of the Sony BIOS. He also stated that at other times he disassembled portions of the Sony BIOS when doing so was "the most efficient way of finding that bug." In a subsequent question, he clarified that disassembly was not the only way to fix the bug, just the fastest way to do so.

With respect to Connectix's observation of the Sony BIOS in the development of the Virtual Game Station for Windows, other solutions, presumably disassembly, may have been possible. Connectix engineer Giles responded "I don't know" when asked by Sony counsel if "it would have been possible to write the CD-ROM code before building the emulator."

Sony contends that Connectix's reverse engineering of the Sony BIOS should be considered unnecessary on the rationale that Connectix's decision to observe the Sony BIOS in an emulated environment required Connectix to make more intermediate copies of the Sony BIOS than if Connectix had

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[8] The depositions of Connectix engineers Aaron Giles and Eric Traut suggest that Connectix engineers recognized that other engineering solutions were sometimes available.

performed a complete disassembly of the program. Under this logic, at least some of the intermediate copies were not necessary within the meaning of *Sega*. This construction stretches *Sega* too far. The "necessity" we addressed in *Sega* was the necessity of the method, *i.e.*, disassembly, not the necessity of the number of times that method was applied. *See* 977 F.2d at 1524-26. In any event, the interpretation advanced by Sony would be a poor criterion for fair use. Most of the intermediate copies of the Sony BIOS were made by Connectix engineers when they booted up their computers and the Sony BIOS was copied into RAM. But if Connectix engineers had left their computers turned on throughout the period during which they were observing the Sony BIOS in an emulated environment, they would have made far fewer intermediate copies of the Sony BIOS (perhaps as few as one per computer). Even if we were inclined to supervise the engineering solutions of software companies in minute detail, and we are not, our application of the copyright law would not turn on such a distinction.[9] Such a rule could be easily manipulated. More important, the rule urged by Sony would require that a software engineer, faced with two engineering solutions that each require intermediate copying of protected and unprotected material, often follow the *least efficient solution*. (In cases in which the solution that required the fewest number of intermediate copies

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[9]Sony relies on these RAM copies for its contention, which we reject, that there is no significant difference between the facts of this case and our decisions in *Triad Systems Corp. v. Southeastern Express Co.*, 64 F.3d 1330 (9th Cir. 1995) and *MAI Systems Corp. v. Peak Computer, Inc.*, 991 F.2d 511 (9th Cir. 1993). Those cases are inapposite to our fair use analysis. Neither involved reverse engineering of software to gain access to unprotected functional elements.

was also the most efficient, an engineer would pursue it, presumably, without our urging.) This is precisely the kind of "wasted effort that the proscription against the copyright of ideas and facts ... [is] designed to prevent." *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 354, 111 S.Ct. 1282, 113 L.Ed.2d 358 (1991) (internal quotation marks omitted). Such an approach would erect an artificial hurdle in the way of the public's access to the ideas contained within copyrighted software programs. These are "aspects that were expressly denied copyright protection by Congress." *Sega*, 977 F.2d at 1526 (citing 17 U.S.C. § 102(b)). We decline to erect such a barrier in this case. If Sony wishes to obtain a lawful monopoly on the functional concepts in its software, it must satisfy the more stringent standards of the patent laws. *See Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 160-61, 109 S.Ct. 971, 103 L.Ed.2d 118 (1989); *Sega*, 977 F.2d at 1526. This Sony has not done. The second statutory factor strongly favors Connectix.

2. Amount and Substantiality Of The Portion Used

With respect to the third statutory factor, amount and substantiality of the portion used in relation to the copyrighted work as a whole, Connectix disassembled parts of the Sony BIOS and copied the entire Sony BIOS multiple times. This factor therefore weighs against Connectix. But as we concluded in *Sega*, in a case of intermediate infringement when the final product does not itself contain infringing material, this factor is of "very little weight." *Sega*, 977 F.2d at 1526-27; *see also Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 449-50, 104 S.Ct. 774, 78 L.Ed.2d 574 (1984) (copying of entire work does not preclude fair use).

3. Purpose And Character Of The Use

Under the first factor, purpose and character of the use, we

inquire into whether Connectix's Virtual Game Station:

> merely supersedes the objects of the original creation, or instead adds something new, with a further purpose or different character, altering the first with new expression, meaning, or message; it asks, in other words, whether and to what extent the new work is "transformative."

Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569, 579, 114 S.Ct. 1164, 127 L.Ed.2d 500 (1994) (internal quotation marks and citations omitted). As an initial matter, we conclude that the district court applied an erroneous legal standard; the district court held that Connectix's commercial purpose in copying the Sony BIOS gave rise to a "presumption of unfairness that ... can be rebutted by the characteristics of a particular commercial use." Order at 14- 15 (citing *Sega*, 977 F.2d at 1522). Since *Sega*, however, the Supreme Court has rejected this presumption as applied to the first and fourth factor of the fair use analysis. *Acuff-Rose*, 510 U.S. at 584, 594, 114 S.Ct. 1164 (clarifying *Sony*, 464 U.S. at 451, 104 S.Ct. 774). Instead, the fact that Connectix's copying of the Sony BIOS was for a commercial purpose is only a "separate factor that tends to weigh against a finding of fair use." *Id.* at 585, 114 S.Ct. 1164 (internal quotation marks omitted).[10]

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[10] Sony points to *Micro Star v. Formgen, Inc.*, 154 F.3d 1107 (9th Cir. 1998), for the proposition that commercial use creates a presumption of unfairness. *See id.* at 1113 (quoting *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 451, 104 S.Ct. 774, 78 L.Ed.2d 574 (1984)). We do not read *Micro Star* that way; moreover, such a reading would be contrary to *Acuff-Rose*. *Acuff-Rose* expressly rejected such a "hard evidentiary presumption" and stated that the Court of Appeals "erred" by giving such dispositive weight to the commercial nature of the use. 510 U.S. at 584, 114 S.Ct. 1164.

We find that Connectix's Virtual Game Station is modestly transformative. The product creates a new platform, the personal computer, on which consumers can play games designed for the Sony PlayStation. This innovation affords opportunities for game play in new environments, specifically anywhere a Sony PlayStation console and television are not available, but a computer with a CD-ROM drive is. More important, the Virtual Game Station itself is a wholly new product, notwithstanding the similarity of uses and functions between the Sony PlayStation and the Virtual Game Station. The expressive element of software lies as much in the organization and structure of the object code that runs the computer as it does in the visual expression of that code that appears on a computer screen. *See* 17 U.S.C. § 102(a) (extending copyright protection to original works of authorship that "can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device"). Sony does not claim that the Virtual Game Station itself contains object code that infringes Sony's copyright. We are therefore at a loss to see how Connectix's drafting of entirely new object code for its VGS program could not be transformative, despite the similarities in function and screen output.

Finally, we must weigh the extent of any transformation in

Also, *Micro Star* itself involved a use that was non-transformative, which is not the case here. *See Micro Star*, 154 F.3d at 1113 & n. 6. *Cf. American Geophysical Union v. Texaco, Inc.*, 60 F.3d 913, 921-22 (2d Cir.1994) (amended opinion) (rejecting, on grounds of *Acuff-Rose* and collected cases, presumption of unfairness for commercial use as applied to Texaco's intermediate copying of copyrighted articles).

Connectix's Virtual Game Station against the significance of other factors, including commercialism, that militate against fair use. *See Acuff-Rose*, 510 U.S. at 579, 114 S.Ct. 1164. Connectix's commercial use of the copyrighted material was an intermediate one, and thus was only "indirect or derivative." *Sega*, 977 F.2d at 1522. Moreover, Connectix reverse-engineered the Sony BIOS to produce a product that would be compatible with games designed for the Sony PlayStation. We have recognized this purpose as a legitimate one under the first factor of the fair use analysis. *See id.* Upon weighing these factors, we find that the first factor favors Connectix.

The district court ruled, however, that the Virtual Game Station was not transformative on the rationale that a computer screen and a television screen are interchangeable, and the Connectix product therefore merely "supplants" the Sony PlayStation console. Order at 15. The district court clearly erred. For the reasons stated above, the Virtual Game Station is transformative and does not merely supplant the PlayStation console. In reaching its decision, the district court apparently failed to consider the expressive nature of the Virtual Game Station software itself. Sony's reliance on *Infinity Broadcast Corp. v. Kirkwood*, 150 F.3d 104 (2d Cir. 1998), suffers from the same defect. The *Infinity* court reasoned that a "change of format, though useful, is not technically a transformation." *Id.* at 108 n. 2. But the infringing party in that case was merely taking copyrighted radio transmissions and retransmitting them over telephone lines; there was no new expression. *Id.* at 108. *Infinity* does not change our conclusion; the purpose and character of Connectix's copying points toward fair use.

4. Effect Of The Use Upon The Potential Market

We also find that the fourth factor, effect of the use upon the potential market, favors Connectix. Under this factor, we consider:

> not only the extent of market harm caused by the particular actions of the alleged infringer, but also "whether unrestricted and widespread conduct of the sort engaged in by the defendant ... would result in a substantially adverse impact on the potential market" for the original.

Acuff-Rose, 510 U.S. at 590, 114 S.Ct. 1164 (quoting 3 M. Nimmer & D. Nimmer, *Nimmer on Copyright*, § 13.05[A][4], at 13-102.61 (1993)). Whereas a work that merely supplants or supersedes another is likely to cause a substantially adverse impact on the potential market of the original, a transformative work is less likely to do so. *See id.* at 591, 114 S.Ct. 1164; *Harper & Row, Publishers, Inc. v. Nation Enters., Inc.*, 471 U.S. 539, 567-69, 105 S.Ct. 2218, 85 L.Ed.2d 588 (1985).

The district court found that "[t]o the extent that such a substitution [of Connectix's Virtual Game Station for Sony PlayStation console] occurs, Sony will lose console sales and profits." Order at 19. We recognize that this may be so. But because the Virtual Game Station is transformative, and does not merely supplant the PlayStation console, the Virtual Game Station is a legitimate competitor in the market for platforms on which Sony and Sony-licensed games can be played. *See Sega*, 977 F.2d at 1522-23. For this reason, some economic loss by Sony as a result of this competition does not compel a finding of no fair use. Sony understandably seeks control over the market for devices that play games Sony produces or licenses. The copyright law, however, does not confer such a monopoly. *See id.* at 1523-24 ("[A]n attempt to monopolize the market by making it impossible for others to compete runs counter to the statutory purpose of promoting creative expression and cannot constitute a strong equitable basis for resisting the invocation of the fair use doctrine."). This factor favors Connectix.

The four statutory fair use factors must be "weighed together, in light of the purposes of copyright." *Acuff-Rose*, 510 U.S. at

578, 114 S.Ct. 1164. Here, three of the factors favor Connectix; one favors Sony, and it is of little weight. Of course, the statutory factors are not exclusive, *Harper & Row*, 471 U.S. at 560, 105 S.Ct. 2218, but we are unaware of other factors not already considered that would affect our analysis. Accordingly, we conclude that Connectix's intermediate copying of the Sony BIOS during the course of its reverse engineering of that product was a fair use under 17 U.S.C. § 107, as a matter of law. With respect to its claim of copyright infringement, Sony has not established either a likelihood of success on the merits or that the balance of hardships tips in its favor. *See Cadence Design Sys., Inc. v. Avant! Corp.*, 125 F.3d 824, 826 (9th Cir. 1997), *cert. denied*, 523 U.S. 1118, 118 S.Ct. 1795, 140 L.Ed.2d 936 (1998). Accordingly, we need not address defenses asserted by Connectix under 17 U.S.C. § 117(a)(1) and our doctrine of copyright misuse. We reverse the district court's grant of a preliminary injunction on the ground of copyright infringement.[11]

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[11]We do not accept Sony's argument that the downloading of Sony's BIOS from the Internet was itself an infringement justifying the injunction. The evidence of record suggests that the downloaded BIOS played a minimal role, if any, in development of the Virtual Game Station. We conclude that, on this record, the downloading infringement, if such it was, would not justify our upholding the injunction on the development and sale of the Virtual Game Station. The Virtual Game Station itself infringes no copyright. Bearing in mind the goals of the copyright law, "to stimulate artistic creativity for the general public good," *Sony*, 464 U.S. at 432, 104 S.Ct. 774 (internal quotation marks omitted), we conclude that there is a legitimate public interest in the publication of Connectix's software, and that this interest is not overborne by the record evidence related to the downloaded BIOS. The imposition of

B. Tarnishment

The district court found that Connectix's sale of the Virtual Game Station tarnished Sony's "PlayStation" mark under 15 U.S.C. § 1125(c)(1). The district court based its preliminary injunction, however, exclusively on Sony's copyright claim, and did not cite its tarnishment finding as a ground for the injunction. Although we can "affirm the district court on any ground supported by the record," *Charley's Taxi Radio Dispatch Corp. v. SIDA of Haw., Inc.*, 810 F.2d 869, 874 (9th Cir. 1987), we decline to affirm on this alternative ground. Sony has not shown a likelihood of success on each element of the tarnishment claim.

To prevail on its tarnishment claim, Sony must show that (1) the PlayStation "mark is famous;" (2) Connectix is "making a commercial use of the mark;" (3) Connectix's "use began after the mark became famous;" and (4) Connectix's "use of the mark dilutes the quality of the mark by diminishing the capacity of the mark to identify and distinguish goods and services." *Films of Distinction, Inc. v. Allegro Film Prods., Inc.*, 12 F. Supp. 2d 1068, 1078 (C.D. Cal.1998); 15 U.S.C. §§ 1125(c)(1), 1127 (definition of "dilution"). Connectix does not dispute the first and third of these elements. We address only the fourth element.

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an injunction is discretionary. *See* 17 U.S.C. § 502(a). On this record, we conclude that it would be inappropriate to uphold the injunction because of Connectix's copying and use of the downloaded Sony BIOS; damages would adequately protect Sony's interest with respect to that alleged infringement. *See Acuff-Rose*, 510 U.S. at 578 n. 10, 114 S.Ct. 1164 (discussing factors to be evaluated in deciding whether to enjoin product found to have exceeded bounds of fair use).

Because Sony proceeds under a tarnishment theory of dilution, it must show under this fourth element that its PlayStation mark will "suffer negative associations" through Connectix's use. *Hormel Foods Corp. v. Jim Henson Prods., Inc.*, 73 F.3d 497, 507 (2d Cir.1996); *see also* 4 J. Thomas McCarthy, *McCarthy on Trademarks and Unfair Competition* § 24.95 (4th ed. 1996 & Supp. 1999). The district court found the Virtual Game Station does not play PlayStation games as well as the PlayStation console, and that although the Virtual Game Station's packaging contains a disclaimer to this effect, "game players do not comprehend this distinction." Order at 24-25. The Sony PlayStation mark therefore suffers negative associations because of this confusion on the part of consumers who play Sony games on the Virtual Game Station software. *Id.* at 25.

The evidence on the record does not support such a finding of misattribution. The district court relied primarily on a series of semi-anonymous reviews posted on the Internet and submitted by Connectix. As the district court acknowledged, these reviews were neither authenticated nor identified. More important, the print-out of the comments does not reveal the context which the comments were made; this omission makes the extent of any confusion by game players difficult to assess reliably. The district court also referred to two focus group studies conducted by market research firms at Sony's bequest. These studies address the difference of quality between the Virtual Game Station and PlayStation, but shed no light on the question of misattribution. Thus, we reject as clearly erroneous the district court's finding that the Virtual Game Station tarnishes the Sony PlayStation mark on a misattribution theory of tarnishment.

Nor are we persuaded by Sony's argument that the difference in quality between the two platforms is itself sufficient to find

tarnishment. *See Deere & Co. v. MTD Prods., Inc.*, 41 F.3d 39, 43 (2d Cir. 1994) ("'Tarnishment' generally arises when the plaintiff's trademark is linked to products of shoddy quality," diminishing the value of the mark "because the public will associate the lack of quality ... with the plaintiff's unrelated goods."). Even if we assume, without deciding, that the concept of tarnishment is applicable to the present factual scenario, there is insufficient evidence to support a finding of tarnishment. "The *sine qua non* of tarnishment is a finding that plaintiff's mark will suffer negative associations through defendant's use." *Hormel Foods*, 73 F.3d at 507. The evidence here fails to show or suggest that Sony's mark or product was regarded or was likely to be regarded negatively because of its performance on Connectix's Virtual Game Station. The evidence is not even substantial on the quality of that performance. The Sony studies, each of included eight participants, presented a range of conclusions. One study concluded that "[o]n balance, the results of this focus group study show that the testers preferred the PlayStation gaming experience over the Virtual Game Station gaming experience." The other concluded that consumers found the Virtual Game Station was "generally acceptable" for one game, but "nearly unplayable" on another. The internet reviews submitted by Connectix also presented a range of opinion; while some anonymous reviewers loved the Virtual Game Station, some were ambivalent, and a relative few hated the Virtual Game Station emulation. In the only review for attribution, *Newsweek* said the software played "surprisingly well," and that some games on the Virtual Game Station "rocked." Steven Levy, "Play it Your Way," *Newsweek*, Mar. 15, 1999, at 84. This evidence is insufficient to support a conclusion that the shoddiness of the Virtual Game Station alone tarnishes the Sony mark. Sony's tarnishment claim cannot support the injunction.

CONCLUSION

Connectix's reverse engineering of the Sony BIOS extracted from a Sony PlayStation console purchased by Connectix engineers is protected as a fair use. Other intermediate copies of the Sony BIOS made by Connectix, if they infringed Sony's copyright, do not justify injunctive relief. For these reasons, the district court's injunction is dissolved and the case is remanded to the district court. We also reverse the district court's finding that Connectix's Virtual Game Station has tarnished the Sony PlayStation mark.

REVERSED AND REMANDED.

APPENDIX B

SONY COMPUTER ENTERTAINMENT INC., et al., Plaintiffs,

v.

CONNECTIX CORPORATION, Defendant.

No. C-99-0390-CAL.

UNITED STATES DISTRICT COURT, FOR THE NORTHERN DISTRICT OF CALIFORNIA.

April 20, 1999.

ORDER ON MOTION FOR PRELIMINARY INJUNCTION

LEGGE, District Judge.

Now before the court is plaintiff's motion for a preliminary injunction. On January 27, 1999 plaintiff Sony filed its complaint alleging copyright infringement and other causes of action against defendant Connectix Corporation. Since that date, Sony made two applications for temporary restraining orders against Connectix' product, the Virtual Game System ("VGS"). This court granted the second application for a temporary restraining order, for the reasons stated on the record in open court on March 11, 1999. After expedited discovery by the parties, the present motion was filed. Sony has also amended its complaint, but this motion for a preliminary injunction is evaluated in the context of plaintiff's original complaint.

Sony asserts that it is likely to prevail on three claims–copyright infringement, circumvention of technological protection measures, and trademark dilution. For purposes of this motion, the central allegation is copyright infringement.

Sony argues that in developing its VGS, Connectix unlawfully copied and used Sony's BIOS code. While Sony concedes that the completed VGS machine does not now contain any of plaintiff's copyrighted material, Sony asserts that the product was unlawfully created by the use of plaintiff's copyrighted code. Sony also contends that the VGS tarnishes its famous PlayStation trademark, because PlayStation games do not run as well on defendant's emulation machine as they do on a PlayStation console. Sony seeks to enjoin Connectix from using Sony's BIOS in the development of its products, and from selling the VGS products made from the use of Sony's code.

The issues have been fully briefed by the parties. Oral argument was heard on April 9, 1999 and the matter was submitted. The court has carefully reviewed the moving and opposing papers, the documents and declarations filed in support and opposition, the parties' arguments and the applicable authorities. For the reasons discussed below, the court concludes that Sony's motion for preliminary injunction must be granted.

I.

Plaintiffs Sony Computer Entertainment, Inc. and its subsidiary Sony Computer Entertainment America (collectively called "Sony") are the developers, manufacturers and distributors of the Sony PlayStation and PlayStation games. They also license other companies to make games that can play on the PlayStation system. "PlayStation" is a registered trademark of Sony. The PlayStation system consists of a console, controllers, and software that are designed to produce a three-dimensional game for play on a television monitor connected to the console.

Sony expended over three years and approximately $500

million to develop the PlayStation video game system. Since its release in the United States in September 1995, Sony has spent an additional $100 million to promote the system. Sony is a leader in the video game console business by selling over twenty million PlayStations worldwide.

The parties essentially agree on the composition of the PlayStation system. The PlayStation console consists of numerous *hardware* components, including a MIPS R3000 Central Processing Unit (CPU), Geometry Transfer Engine (GTE), Data Decompression Engine (MDEC), Memory–main RAM, video RAM, sound RAM, and CD ROM buffer– Graphics Processing Unit (GPU), Sound Processing Unit (SPU), Graphics Chip, CD-ROM Drive, Game Pad and Serial Port. The GTE and the GPU are custom built microprocessors designed by Sony's engineers for the PlayStation. These chips perform the complex mathematical calculations necessary to produce realistic 3-D graphics. Sony considers the processes performed by the GTE and GPU chips to be company trade secrets.

The console also contains *firmware*, which is the equivalent of an operating system, that resides in a ROM chip. The firmware is the Sony BIOS.[12] Sony holds copyright registrations on its BIOS program. Sony's policy is not to authorize anyone to distribute its BIOS program independent of its inclusion in the PlayStation console, nor to authorize anyone to copy the BIOS for any purpose. The source code for the BIOS is never disseminated by Sony outside the company.

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[12]"BIOS" is an acronym for "basic input-output system."

The source code[13] of the Sony BIOS consists of a combination of C source code and R3000 microprocessor assembly language. Tools are used to compile and link this source code into a series of instructions that can be executed by the R3000 microprocessor in the PlayStation. The tools produce a file of binary data that is written into the ROM device. The R3000 microprocessor reads instructions from this ROM.

The operation of the PlayStation is also controlled by a PlayStation video game that is placed in the CD-ROM drive of the console. The video game program sends function calls to the BIOS of the PlayStation console.

The PlayStation console also includes several technological protection measures, which prevent a user from playing a counterfeit PlayStation game. Two of these technological protection measures are relevant to this motion. One is that PlayStation games include a computer program known as PlayStation Library Code. Sony owns a copyright on its Library Code. Sony licenses its copyrighted Library Code and PlayStation trademark to a number of independent video game developers, for the purpose of making games compatible with the PlayStation. The PlayStation console cannot play a PlayStation game unless it contains the copyrighted Library Code. Another protection measure is that PlayStation games contain WIZ Code. The WIZ Code operates as a gatekeeper to the Library Code. The WIZ Code distinguishes a genuine PlayStation game from a counterfeit. The PlayStation console must read the WIZ Code before it can access the Library Code.

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[13]Source code is software in a human readable form that is written by the software developer. Object code is software in a computer readable form, also referred to as binary data (1's and 0's).

II.

Defendant Connectix Inc. is a developer, manufacturer and marketer of computer software products. Its VGS is called an "emulator," a software program which individuals install on their computers. That software program is designed to emulate a Sony PlayStation, allowing certain computers to run Sony PlayStation games. At this time, Connectix has developed its VGS for Macintosh computers only. Connectix is currently developing a VGS for Windows, and is scheduled to debut its VGS for Windows in May 1999.

The VGS plays many PlayStation games, but admittedly not as well as when those games are played on a PlayStation console. Connectix specifically includes a disclaimer on its packaging which states that not all PlayStations games are compatible and that some mechanical problems in the running of the games may occur.

III.

The parties agree that in order to develop a PlayStation emulator, Connectix needed to emulate both the PlayStation *hardware* (i.e., GTE, GPU, etc.) and the *firmware* (the Sony BIOS).

Connectix began developing VGS around July 1, 1998. In developing the VGS, Connectix decided to first emulate the PlayStation's hardware. Connectix admits that during the early stages of the project, Connectix' engineers used the Sony BIOS to develop the hardware emulator.

Connectix' engineers obtained a copy of the Sony BIOS from the Internet. Apparently, the engineers downloaded a copy of the BIOS (object code version) from the Internet and stored the BIOS on its computer hard drives. However, the downloaded BIOS was an outdated Japanese version. After developing a

portion of the VGS hardware, Connectix discovered that the BIOS it was using was the "wrong" version.

After this discovery, Connectix' Chief Technical Officer purchased a Sony PlayStation, broke it apart, and took out the ROM chip containing the BIOS. The contents of that ROM chip were downloaded onto a disk. Connectix' engineers then used this disk to continue their development of the VGS, both the hardware and their own BIOS.

During its development of the VGS, Connectix contacted Sony and requested "technical assistance" from Sony to complete the development of VGS. A meeting occurred sometime in September 1998. Connectix wanted Sony's help to understand the PlayStation's firmware and anti-counterfeit programs. However, Sony declined Connectix's request.

It is undisputed that the early version of VGS contained the complete, unchanged Sony BIOS. Prior to the meeting with Sony, Connectix had not taken any steps to develop its own BIOS. The evidence shows that Connectix did not begin developing its own BIOS until after Sony declined Connectix' request for technical assistance, sometime in October 1998.

As its final step in the VGS development, Connectix replaced the Sony BIOS code with its own BIOS code. Connectix completed VGS for Macintosh computers some time in late December 1998 or early January 1999. The product was announced at the MacWorld Expo on January 5, 1999. At MacWorld, Connectix specifically marketed VGS as a "PlayStation emulator"–VGS permits users to play "their favorite PlayStation games" without the need to purchase a PlayStation console.

IV.

A district court may award preliminary injunctive relief if the

moving party demonstrates "either a likelihood of success on the merits and the possibility of irreparable injury or that serious questions going to the merits were raised and the balance of hardships tips sharply in its favor." *Cadence Design Systems, Inc. v. Avant! Corp.*, 125 F.3d 824, 826 (9th Cir. 1997), *cert. denied*, --- U.S. ---, 118 S.Ct. 1795, 140 L.Ed.2d 936 (1998). These formulations of the standard are not separate tests, but represent two points on a sliding scale in which the degree of necessary harm decreases as the probability of success on the merits increases. *Dr. Seuss Enterprises, L.P. v. Penguin Books*, 109 F.3d 1394, 1396 fn. 2 (9th Cir. 1997), *cert. dismissed*, 521 U.S. 1146, 118 S.Ct. 27, 138 L.Ed.2d 1057 (1997).

In copyright and trademark cases, irreparable injury is presumed upon a showing of likelihood of success on the merits. *Cadence Design Systems, Inc.*, 125 F.3d at 826-27 (copyright); *Rodeo Collection, Ltd. v. West Seventh*, 812 F.2d 1215, 1220 (9th Cir. 1987) (trademark).

V.

Sony first argues that it has shown a likelihood of success on its copyright infringement claim because Connectix admits to copying and using Sony's BIOS code.

A copyright owner enjoys the exclusive right to reproduce a copyrighted work, to prepare derivative works based on the copyrighted work, and to distribute a copyrighted work. *See* 17 U.S.C. § 106(1), (2) and (3). To prove copyright infringement, a plaintiff must show two elements: (1) ownership of a valid copyright, and (2) copying of expression protected by the copyright. *Triad Systems Corp. v. Southeastern Express Co.*, 64 F.3d 1330, 1335 (9th Cir. 1995).

Sony has provided a copy of its Certificate of Registration with the Copyright Office for its BIOS code, and its ownership

under Berne Convention procedures. This raises a presumption of the validity of Sony's copyright in its BIOS code. *See* 17 U.S.C. § 410(c). Defendant has not rebutted this presumption.

Sony's copyright infringement claim is based on a theory of intermediate infringement. Sony alleges that Connectix is guilty of two distinct forms of intermediate infringement: First, Sony contends that during the development of both the Macintosh and Windows versions of VGS, Connectix repeatedly duplicated Sony's BIOS code in its entirety and used those copies while it developed a computer program that emulates the hardware components of the PlayStation console. Second, Sony contends that Connectix disassembled Sony's BIOS in order to develop its own VGS BIOS by gradually replacing elements of Sony's code with its own.

Connectix does not address Sony's argument regarding the alleged intermediate infringement, nor does Connectix address the authorities cited by Sony. Instead, Connectix argues that Sony's copyright claim fails because Sony has not met the preliminary burden of establishing that Sony's BIOS is entitled to copyright protection. Connectix argues that Sony must perform a so-called "filtration analysis" to demonstrate that its BIOS constitutes protected expression. *Computer Associates v. Altai*, 982 F.2d 693, 707 (2nd Cir. 1992). The Ninth Circuit also discussed the filtration test in *Apple Computer, Inc. v. Microsoft Corp.*, 35 F.3d 1435, 1442 (9th Cir. 1994). In determining whether unlawful copying has occurred, it is appropriate to use a two-part test "having 'extrinsic' and 'intrinsic' components." *Id.* In brief, the *extrinsic test* considers whether there are substantial similarities in both ideas and expression based on external criteria. *Id.* The *intrinsic test* measures similarity of expression from the standpoint of the ordinary reasonable observer, with no expert assistance. *Id.* The intrinsic test measures expression subjectively and

compares the works "as a whole." *Id.* at 1443.

Sony responds that a filtration analysis is not necessary because Connectix has admittedly *copied* and *used* Sony's copyrighted work in its entirety. Sony cites *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366, 1373 (10th Cir. 1997). This court agrees that a filtration analysis is not applicable in the present case, because of the Ninth Circuit's holdings in *MAI Systems Corp. v. Peak Computer, Inc.*, 991 F.2d 511, 517-519 (9th Cir. 1993), and *Triad Systems Corp.*, 64 F.3d at 1335.

In *MAI Systems Corp.*, the Ninth Circuit held that a "copying" for purposes of copyright law occurs when a computer program is transferred from a permanent storage device to a computer's RAM. The court explained that a company's loading of copyrighted computer software onto the memory of its central processing unit causes a copy to be made. *MAI Systems Corp.*, 991 F.2d at 518. In the absence of the express permission of the copyright owner, such an act constitutes copyright infringement. *Id.* The district court in *MAI Systems Corp.* did not perform a filtration analysis because the entire copyrighted operating system had been used in the accused's computer.

Further, in *Triad Systems Corp.* the Ninth Circuit took the *MAI Systems Corp.* holding a step farther. The Ninth Circuit explained that when an entire computer software program is copied, there is no doubt that protected elements of the software were copied. *Triad Systems Corp.*, 64 F.3d at 1335 citing *Sega Enters. Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1525 (9th Cir. 1992). In the wholesale copying of a copyrighted operating system, a filtration analysis is not necessary. *Id.*

The present case is indistinguishable from *MAI Systems Corp.* and *Triad Systems Corp.* Connectix concedes that the Sony BIOS is an operating system for a computer. Also, Connectix admits that it copied Sony's BIOS in its entirety. The primary

engineers of the VGS testified to this fact in their depositions. Two complete "base" copies were made of the Sony BIOS–one was allegedly downloaded from the Internet, and the other came from the ROM chip inside the PlayStation console. It is this admitted wholesale copying of the protected Sony BIOS which constitutes a "copy" under the Copyright Act. And the Connectix engineers admitted that they used the copies to develop the emulator of Sony's hardware, and to gradually convert Sony's code to their own code.

Defendant has submitted supplemental declarations of their engineers, which were made *after* their depositions were taken. Defendant says that the later declarations are to "put [their] responses to [plaintiff's counsel's] questions in context for the Court, because the answers could be misleading otherwise." The court has not attributed much weight to those supplemental declarations. The declarations directly contradict the engineers' deposition testimony. In their supplemental declarations, both engineers make retractions of their deposition testimony or provide placating explanations which defuse their testimony. But it is their deposition testimony which is most significant. *See e.g. Radobenko v. Automated Equip. Corp.*, 520 F.2d 540, 544 (9th Cir. 1975) (a party cannot create an issue of fact in a motion for summary judgment by a subsequent declaration contradicting his or her own deposition testimony).

Connectix argues that it had to copy and run the entire Sony BIOS "to understand" and "to study" the BIOS' functional elements. This argument is misplaced in the present step in the analysis. That is, Connectix' reasons for its copying and use of the Sony BIOS involve an alleged defense, which only becomes relevant in the later "fair use" defense analysis. At this stage of the motion, Connectix admits to copying and using the entire Sony BIOS. This is unlawful copying under the Copyright Act. In light of this, there is no doubt that protectable material was

copied by Connectix. Sony has shown a likelihood of success as to its prima facie case.

VI.

This conclusion however does not end the court's analysis. Even though Sony has established a strong showing of copyright infringement, Connectix has asserted a "fair use" defense under 17 U.S.C. § 107.

Fair use is an equitable rule requiring a balancing of multiple factors "in light of the purposes of copyright." *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 578, 114 S.Ct. 1164, 127 L.Ed.2d 500 (1994). The fair use defense "permits courts to avoid rigid application of the copyright statute when, it would stifle the very creativity which that law is designed to foster." *Dr. Seuss Enterprises, L.P.*, 109 F.3d at 1399, quoting *Iowa State Univ. Research Found., Inc. v. American Broadcasting Cos.*, 621 F.2d 57, 60 (2nd Cir. 1980). The burden of proof on the fair use defense is on Connectix. *Acuff-Rose Music, Inc.*, 510 U.S. at 590, 114 S.Ct. 1164; *see also Infinity Broadcast Corp. v. Kirkwood*, 150 F.3d 104, 107 (2nd Cir. 1998) (fair use is an affirmative defense to a claim of infringement, the burden of proof is on its proponent).

There are four factors to be considered and weighed by the court in determining if a fair use defense exists in a given case: (1) the purpose and character of the accused use; (2) the nature of the copyrighted work; (3) the importance of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the accused's use on the potential market for or value of the copyrighted work. *See* 17 U.S.C. § 107.

Sony initially argues that Connectix is barred from asserting fair use as a defense because it has acted in "bad faith" with regards to its development of the VGS. *Adobe Systems Inc. v. Southern Software, Inc.*, 1998 WL 104303, 1998 U.S. Dist.

LEXIS 1941, *18, 45 U.S.P.Q.2d 1827 (N.D. Cal.1998). Most of Sony's arguments regarding Connectix' "bad faith" arise from Connectix' alleged use of improperly downloaded confidential and proprietary Sony documents from the Internet. Sony argues that Connectix admittedly made multiple copies of the Sony BIOS for months during its development of VGS, starting from the bootleg copies found on the Internet. Sony concludes that intermediate copying may be fair use only if the user has copied an authorized copy of the original work.

This issue is not relevant or necessary to the present motion. Sony has amended its complaint to allege the improper use of the material downloaded from the Internet, and will apparently argue that it is a ground for a further motion for a preliminary injunction. But the record is presently incomplete on this issue. And the court need not now address it for purposes of the present motion. The court therefore examines the four fair use factors. In that context, it is clear that defendant's copying and use of the BIOS from the Sony PlayStation was not authorized:

(1) The first factor is the purpose and character of the use, and whether the use is for a commercial purpose. The central purpose of this inquiry is to see whether the new work merely "supersedes the objects" of the original creation or instead adds something new, with a further purpose or different character, altering the first with new expression, meaning, or message. *Acuff-Rose Music Inc.*, 510 U.S. at 579, 114 S.Ct. 1164. It asks whether and to what extent the new work is "transformative." *Id.* The fact that copying is for a commercial purpose weighs against a finding of fair use. *Sega*, 977 F.2d at 1522 citing *Harper & Row, Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539, 562, 105 S.Ct. 2218, 85 L.Ed.2d 588 (1985). However, the presumption of unfairness that arises in such cases can be rebutted by the characteristics of a particular commercial use. *Id.*

Sony argues that Connectix' copying and use of the BIOS was for a purely commercial purpose. Connectix developed VGS to directly compete with the PlayStation. This is demonstrated by the fact Connectix markets its product as a substitute for PlayStation. VGS has the intended purpose of rivaling the PlayStation. Sony also argues that the VGS is not a transformative work. Connectix used the Sony BIOS to develop a product which does the same thing as a PlayStation. VGS is made to be a replacement for Sony's PlayStation.

In response, Connectix argues that it did not copy the BIOS for a *direct* commercial purpose; i.e., Connectix never sold or distributed a version of the VGS that *contained* the Sony BIOS. This argument is insufficient. While Connectix' final product does not *contain* any copyrighted code, Connectix demonstrated and promoted its "substitute" PlayStation product with Sony's BIOS in the VGS prototype. And it used Sony's BIOS to build both its hardware emulator and its own code.

Connectix argues that the VGS is transformative because it operates on a different platform–a computer instead of a television. But the VGS supplants Sony's prior invention. Connectix concedes that the VGS contains the same components as a PlayStation. The VGS does not do anything new, anything different, or anything unique from the PlayStation. It plays PlayStation games on a visual platform. A computer monitor and a television screen are interchangeable for purposes of this analysis.

Finally, Connectix contends that its activities are identical to those of Accolade in *Sega*. Accolade developed video games that were compatible with Sega's game platform. Here, Connectix argues that it developed a game platform that is compatible with Sony's video games. This case is distinguishable from *Sega*. In *Sega*, Accolade had made copies of Sega's video game programs in the process of reverse-

engineering them solely in order to figure out the requirements for compatibility with Sega's game platform. *Sega*, 977 F.2d at 1514-1515. Accolade then developed its *own games* to operate for the Sega platform. Accolade created something new. Here, Connectix is not creating its own product to be used *in conjunction with* Sony's PlayStation. Rather, VGS is a *substitute* product. It is undisputed that VGS was developed as a replacement for PlayStation.

Based on the evidence before the court, the first fair use factor favors Sony.

(2) The second factor is the nature of the copyrighted work. This factor recognizes that creative works are "closer to the core of intended copyright protection" than informational and functional works, "with the consequence that fair use is more difficult to establish when the former works are copied." *Acuff-Rose Music Inc.*, 510 U.S. at 586, 114 S.Ct. 1164.

Sony argues that while its BIOS constitutes a computer program, it is nevertheless a creative work. It is creative, Sony explains, because of how it is structured; *i.e.*, how the programmer decided to express the elements. Connectix copied that expression. Connectix argues that this factor favors it, because Sony's BIOS is an invisible, utilitarian operating system and is afforded a lower level of protection. *Sega*, 977 F.2d at 1520. Further, Connectix contends that it "had to" copy the Sony BIOS to access the unprotected elements. This is permitted by *Sega*. *Id.*

In *Sega* the Ninth Circuit stated that because of the nature of computer programs, disassembly of computer program code *could be* fair use if it was for the purpose of studying the unprotectable ideas contained in the copyrighted software, and if it was *the only way* to gain access to and understand those ideas. *Id.* at 1527. However, Connectix' engineers have

admitted that they disassembled Sony's code not just to study the concepts. They actually used that code in the development of defendant's product.

Based on the deposition testimony of Connectix' primary engineers of the VGS, this factor favors Sony. Connectix attempts to bring its actions within *Sega* by submission of the later declarations of its engineers and the declaration of an expert. The court has discussed the supplemental declarations above. Defendant's expert did not consider the *depositions* of the engineers in formulating his opinions. And his opinions cannot contradict the engineers' statements of fact as to what they did.

(3) The third factor is the amount and substantiality of the portions used. Any conclusion with respect to this factor requires analysis of both the quantity and quality of the alleged infringement.

The record is that Connectix copied and used *all* of Sony's BIOS in the development of the VGS. Sony contends that this wholesale copying militates against finding fair use. *Marcus v. Rowley*, 695 F.2d 1171, 1176 (9th Cir. 1983).

Connectix argues that the court should give little weight to the extent of intermediate copying, because the final product contains *no* copyrighted materials. *Sega*, 977 F.2d at 1526-27 (where the ultimate (as opposed to direct) use is limited, the factor is of little weight).

However, Connectix' copying of the Sony BIOS was both quantitatively and qualitatively substantial. First, Connectix admits to copying the entire Sony BIOS. Connectix also admits that it used the BIOS daily while it was developing the hardware emulation portion of its VGS. The Sony BIOS was never disassembled during this time. Rather, it was used its entirety. Further, Connectix admits that it used the whole Sony

BIOS when it was first developing its own BIOS. It is undisputed that the Sony BIOS is the vital component of the PlayStation console. The BIOS is what makes the PlayStation function. Here, Connectix copied and used this core component in its entirety. Taking the heart of the original, and making it the heart of a new, is to purloin a substantial portion of the essence of the original. *Acuff-Rose Music Inc.*, 510 U.S. at 587, 114 S.Ct. 1164.

The record demonstrates both substantial quantitative and qualitative copying. The third factor favors Sony.

(4) The fourth factor is the effect of the use upon the potential market for or value of the copyrighted work. This factor requires courts to consider not only the extent of market harm caused by the actions of the alleged infringer, but also "whether unrestricted and widespread conduct of the sort engaged in by the defendant ... would result in a substantially adverse impart on the potential market" for the original. *Acuff-Rose Music, Inc.*, 510 U.S. at 590, 114 S.Ct. 1164 quoting 3 M. Nimmer & D. Nimmer, *Nimmer on Copyright*, § 13.05[A][4], p. 13-102.61 (1993).

Both parties submit expert declarations from economists regarding the market impact of the VGS on Sony. The parties agree that Sony is being harmed by the sales of Connectix' emulator. Both experts agree that Sony has, and will, lose sales of its PlayStation console. To the extent an individual purchases a VGS to play PlayStation games, those consumers will be less likely to buy PlayStation consoles. Connectix markets its VGS emulator as a substitute for the PlayStation console. To the extent that such a substitution occurs, Sony will lose console sales and profits.

Connectix's expert attempts to rebut this conclusion by focusing on possible benefits to Sony from the VGS.

Defendant's expert contends that while Sony may lose console sales, this will have no financial impact on Sony. He explains that VGS will in fact increase profits for Sony because it will increase Sony's revenues from the sale of games and the licensing of game software. However, the arguments presented by Connectix' expert are not supported by *evidence* that Sony does not make substantial profits from its console sales.

VII.

The court concludes that Sony has shown a high probability of success on its copyright infringement claim. And Sony has shown sufficient evidence of irreparable injury.

VIII.

Defendant raises two other defenses, which merit only brief discussion. Connectix raises copyright misuse as a defense. However, at the present time, defendant has not presented a sufficient record on which this court could make any decision in defendant's favor.

Connectix also argues that its use of the Sony BIOS is protected under Section 117(a)(1) of the Copyright Act. Section 117 allows the lawful owner of a copy of a computer program to copy or adapt the program if the new copy or adaptation "is created as an essential step in the utilization of the computer program in conjunction with a machine and ... is used in no other manner." 17 U.S.C. § 117(a)(1). Connectix contends that it "legitimately downloaded the Sony BIOS from a PlayStation it had purchased as an essential step in using the Sony BIOS with a personal computer."

Connectix's argument is not the law in this Circuit. In *Sega*, 977 F.2d at 1520, the Ninth Circuit rejected the use of Section 117 to excuse intermediate copying by disassembly. The court stated that "Section 117 does not purport to protect a user who

disassembles object code, converts it from assembly into source code, and makes printouts and photocopies of the refined source code version." *Id.*

IX.

Sony also contends that it is likely to prevail on its trademark dilution claim, because Connectix admits that PlayStation games do not run as well on the VGS as they do on a Sony PlayStation. 15 U.S.C. § 1125.

The Federal Trademark Dilution Act provides that:

> The owner of a famous mark shall be entitled ... to an injunction against another person's commercial use in commerce of a mark or trade name, if such use begins after the mark has become famous and causes dilution of the distinctive quality of the mark.

15 U.S.C. § 1125(c)(1).

In order to prove a violation of Section 1125(c), Sony must show that (1) its mark is famous; (2) Connectix is making a commercial use of the mark in commerce, (3) Connectix' use began after the mark became famous; and (4) Connectix' use of the mark dilutes the quality of the mark by diminishing the capacity of the mark to identify and distinguish goods and services. 15 U.S.C. § 1125(c)(1).

Connectix concedes that Sony's "PlayStation" and "Sony Computer Entertainment" trademarks are famous and distinctive, and that defendant's use began after these marks became famous. Thus, the court only addresses the second and fourth factors.

The evidentiary record demonstrates that Connectix is making commercial use of the PlayStation mark in commerce. Connectix markets the VGS as a PlayStation emulator–an

almost perfect substitute for the Sony PlayStation console. The front of the box in which VGS is packaged uses the PlayStation logo. It states "Play many popular PlayStation games on your Mac." Further, the primary business objective of Connectix is to sell the VGS, which allows consumers to play PlayStation games on their computers. VGS sells on the basis of the popularity and value of Sony's PlayStation mark.

Dilution is defined as the "lessening of the capacity of a famous mark to identify and distinguish goods or services, regardless of the presence or absence of (1) competition between the owner of the famous mark and other parties, or (2) likelihood of confusion, mistake or deception." 15 U.S.C. § 1127.

In authorizing courts to enjoin dilution, Congress intended "to protect famous marks from subsequent uses that blur the distinctiveness of the mark or tarnish or disparage it." H.R.Rep. No 374, 104th Cong., 1st Sess. 3 (1995), *Toys "R" Us Inc. v. Akkaoui*, 1996 WL 772709, 1996 U.S.Dist. LEXIS 17090, *7, 40 U.S.P.Q.2d 1836 (N.D.Cal. 1996). "Blurring" occurs when a defendant uses a plaintiff's trademark to identify the defendant's goods or services, creating the possibility that the mark will lose its ability to serve as a unique identifier of the plaintiff's product. *Panavision International, L.P. v. Toeppen*, 141 F.3d 1316, 1326 fn. 7 (9th Cir. 1998) citing *Ringling Bros. Barnum & Bailey, Combined Shows, Inc. v. B.E. Windows, Corp.*, 937 F.Supp. 204, 209 (S.D.N.Y. 1996). "Tarnishment" occurs when a famous mark is improperly associated with an inferior or offensive product or service. *Id.*

Sony argues that its "PlayStation" mark is being tarnished because some PlayStation games do not function as well on VGS as they do on a PlayStation console. Sony has presented evidence that some games run slower, skip screens, have less control responsiveness, and have poorer graphics and sound.

Sony argues that even though the VGS contains disclaimers about the playability of PlayStation games, consumers are confused about the source of their unsatisfactory game playing experience using the VGS. It is this confusion which is allegedly tarnishing the high quality reputation of the "PlayStation" mark.

In its defense, Connectix argues that Sony's dilution claim is rebutted by the "overwhelmingly positive reviews" of VGS by actual game players. As evidence, Connectix has submitted various documents, most of which have been downloaded from the Internet. Sony has objected to this evidence because the "positive reviews" are from anonymous, Internet postings and constitute hearsay. Sony's objection is well taken. Connectix' evidence consists of various, unidentified Internet reports on the VGS. Some of the reports do not have an identified author. Other reports do not address the issues raised in the motion and thus have limited relevance.

There is one document which defendant submitted but which is detrimental to defendant's position. It is the printout from the "macinsearch" web-page. While the document is not identified or authenticated, it appears to consist of reviews from VGS consumers who have played various PlayStation games on their VGS. Some of these reviews are positive in nature. However, the majority of the reviews indicate a dissatisfaction with the game playing on VGS. What is even more relevant about these negative reviews is that they indicate that the game players are associating the poor performance with the PlayStation game, and not with the VGS. For example, a game player reviewing the FIFA '98 "PlayStation" game stated "this *game* works but the *game* skipped frames which made it difficult to play. I would rate this *game* marginally playable." Another game player reviewing the same game stated "the *game* plays like a pig, really slow and jerky with grainy, stuttering, unintelligible

audio." As for NHL '98, the reviewer stated "this *game* worked but the *game* skipped frames which made it difficult to play. I would rate this *game* marginally playable." As for NHL '99, the reviewer stated "the *game* freezes whenever a goal is scored." (In all cases, the emphasis is added).

While Connectix admits that poor performance of a PlayStation game is due to the VGS and not to the game, it is evident from the reviews that game players do not comprehend this distinction. These reviews, coupled with Sony's surveys, demonstrate that the inferior-quality of game performance with the VGS is tarnishing the PlayStation high-quality game trademark.

Connectix also argues that the "minor problems" allegedly encountered by running PlayStation games on VGS, even if true, do not rise to the level necessary for a claim of trademark dilution. Connectix contends that an unlawful tarnishment requires a showing that the trademark was used in an "unwholesome or degrading context." *E.g. Minnesota Mining and Manufacturing Co. v. Rauh Rubber, Inc.*, 943 F.Supp. 1117, 1132 (D.Minn. 1996) *aff'd* 130 F.3d 1305 (8th Cir. 1997).

However, the case law in the Ninth Circuit holds that "tarnishment occurs when a famous mark is *linked to products of poor quality* or is portrayed in an unwholesome manner." *See Panavision Int'l L.P. v. Toeppen*, 945 F.Supp. 1296, 1304 (C.D.Cal. 1996) *aff'd Panavision Int'l L.P. v. Toeppen*, 141 F.3d 1316, 1325 (9th Cir. 1998) (emphasis added). The record before the court demonstrates that consumers are associating Sony's "PlayStation" mark with the VGS, and are getting inferior results. Sony has established a likelihood that Connectix' VGS dilutes its PlayStation trademark. And irreparable injury is presumed.

X.

Since Sony has made a strong showing as to its copyright and trademark claims, and of irreparable injury, the court need not discuss Sony's claim of defendant's alleged circumvention of Sony's technological protection measures.

XI.

The remaining issue is the scope of the preliminary injunction to be issued.

Sony seeks to enjoin the sale of VGS, both for Macintosh and Windows, based on Connectix' intermediate infringement. Sony argues that it is irrelevant that the final product does not actually contain any Sony BIOS, that an injunction on the sale of VGS is proper in light of the policies underlying the Copyright Act, and that if an injunction does not issue Connectix will escape the consequences of its infringing conduct.

In response, Connectix argues that the court has no authority to enjoin its sale of VGS because the product admittedly does not *contain* any copied code. Defendant cites *Kepner-Tregoe, Inc. v. Leadership Software, Inc.*, 12 F.3d 527, 533 (5th Cir. 1994). However, that case is distinguishable in light of Ninth Circuit law. The Ninth Circuit has held that:

> ... intermediate copying of computer object code *may infringe* the exclusive rights granted to the copyright owner in section 106 of the Copyright Act *regardless of whether the end product of the copying also infringers those rights*.

Sega, 977 F.2d at 1519 (emphasis added). That case does not speak directly to the issue of the appropriate remedy, but it does focus on the nature of the wrong.

While it is undisputed that VGS does *not* contain any

copyrighted material, in a copyright infringement claim based on intermediate infringement, the composition of the end product is not the sole test. The infringing conduct is based on *how* the end product was developed. Here, the evidence is clear that Connectix unlawfully copied and used Sony's BIOS to develop its VGS. Thus, the only effective remedy for such intermediate infringement is to enjoin the end product. If not, an intermediate infringer could always avoid the consequences of illegal copying and use by editing the protected code out of its final product.

While such a broad injunction could have a serious effect on defendant's business, the Ninth Circuit has recognized that a defendant "cannot complain of the harm that will befall it when properly forced to desist from its infringing activities." *Triad Systems Corp.*, 64 F.3d at 1338.

Therefore, this court believes that it has the authority to enjoin, and should enjoin, the retail sale of VGS under *Sega*, 977 F.2d at 1519.

Connectix is therefore enjoined and restrained, pending the trial of this action: (1) From making copies of or using Sony's BIOS, or derivative works based upon or incorporating Sony's BIOS, as a step in developing VGS for Windows. (2) From selling or distributing VGS for either Macintosh or Windows-based computer systems. (3) Connectix is ordered to deliver to the court, in the care of the Clerk of the Court, all copies of Sony's BIOS and all copies of derivative works based upon or incorporating Sony's BIOS. (4) This order shall bind the parties, their officers, agents, servants, employees, bind the parties, their officers, agents, servants, employees, and attorneys, and all those who would act in concert with them after receiving actual notice of this order. Fed.R.Civ.P. 65(d).

Finally, Rule 65(c) requires plaintiff to post a security "in such

sum as the court deems proper." Fed.R.Civ.P 65(c). This generally means an amount sufficient to cover defendant's incidental and consequential costs arising from the injunction. Neither party has addressed the issue of a bond amount in this preliminary injunction motion. Sony was required to post a bond in the amount of $100,000 in conjunction with the court's order on Sony's second application for a temporary restraining order. However, in light of the scope of the court's present order, the court will consider raising the amount of bond on motion by defendant.

A status conference will be held on May 7, 1999, at 11:00 a.m., to consider the scheduling of further proceedings in the case.

IT IS SO ORDERED.

APPENDIX C

UNITED STATES COURT OF APPEALS

FOR THE NINTH CIRCUIT

SONY COMPUTER ENTERTAINMENT, INC., a Japanese corporation; SONY COMPUTER ENTERTAINMENT AMERICA, INC., a Delaware corporation, Plaintiffs-Appellees,	) No. 99-15852) DC No.) CV-99-00390-CAL
v.	) ORDER
CONNECTIX CORPORATION, a California corporation, Defendant-Appellant.	

FILED APRIL 3, 2000.

BEFORE:
CHOY, CANBY and SILVERMAN, Circuit Judges

The panel, as constituted above, has unanimously voted to deny the petition for panel rehearing. Judge Silverman has voted to deny the petition for rehearing en banc, and Judges Choy and Canby have so recommended.

The petition for en banc rehearing has been circulated to the full court, and no judge of the court has requested a vote on the petition for rehearing en banc. Fed. R. App. P. 35(b).

The petition for panel rehearing and the petition for rehearing en banc are denied.